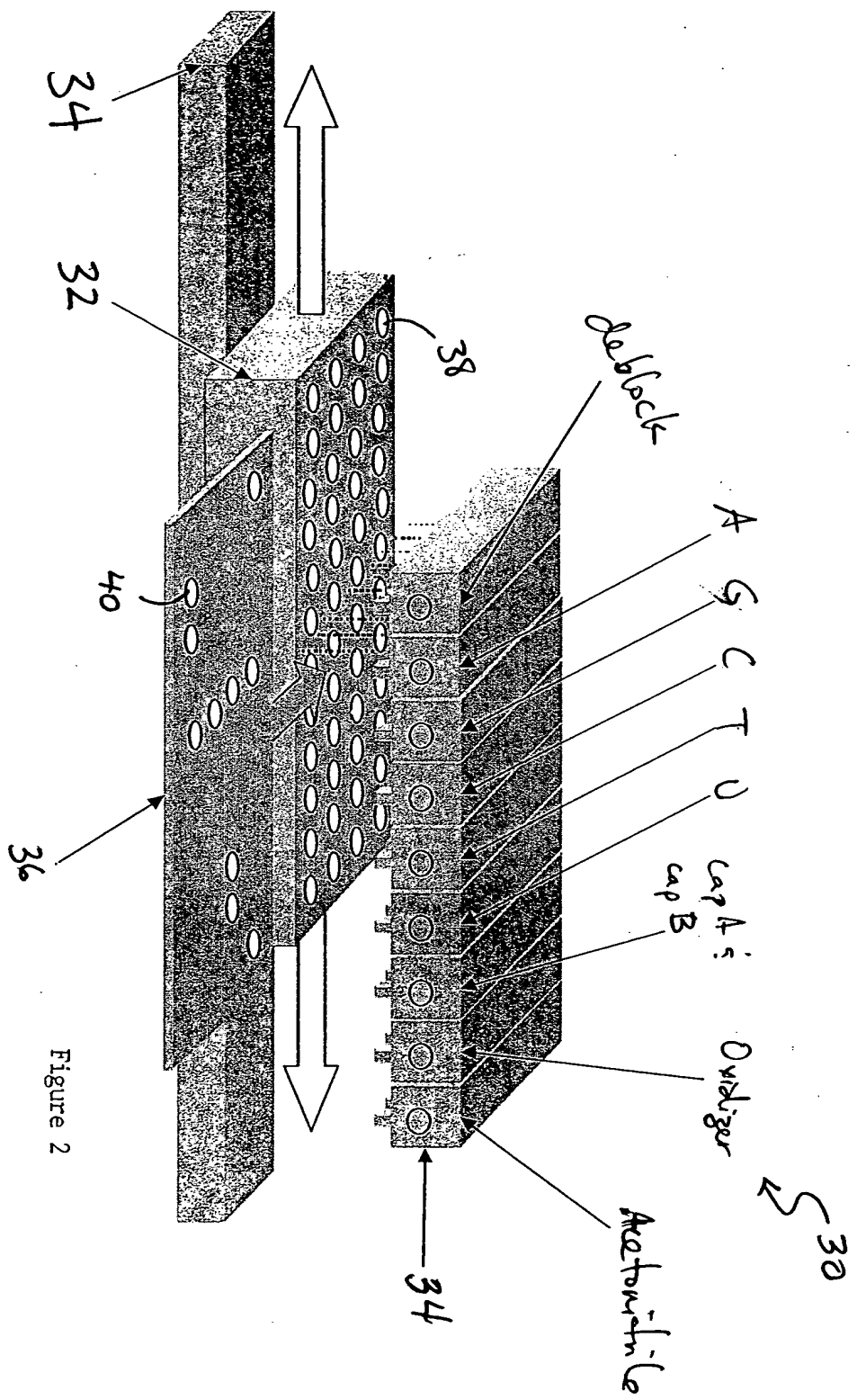


Figure 1



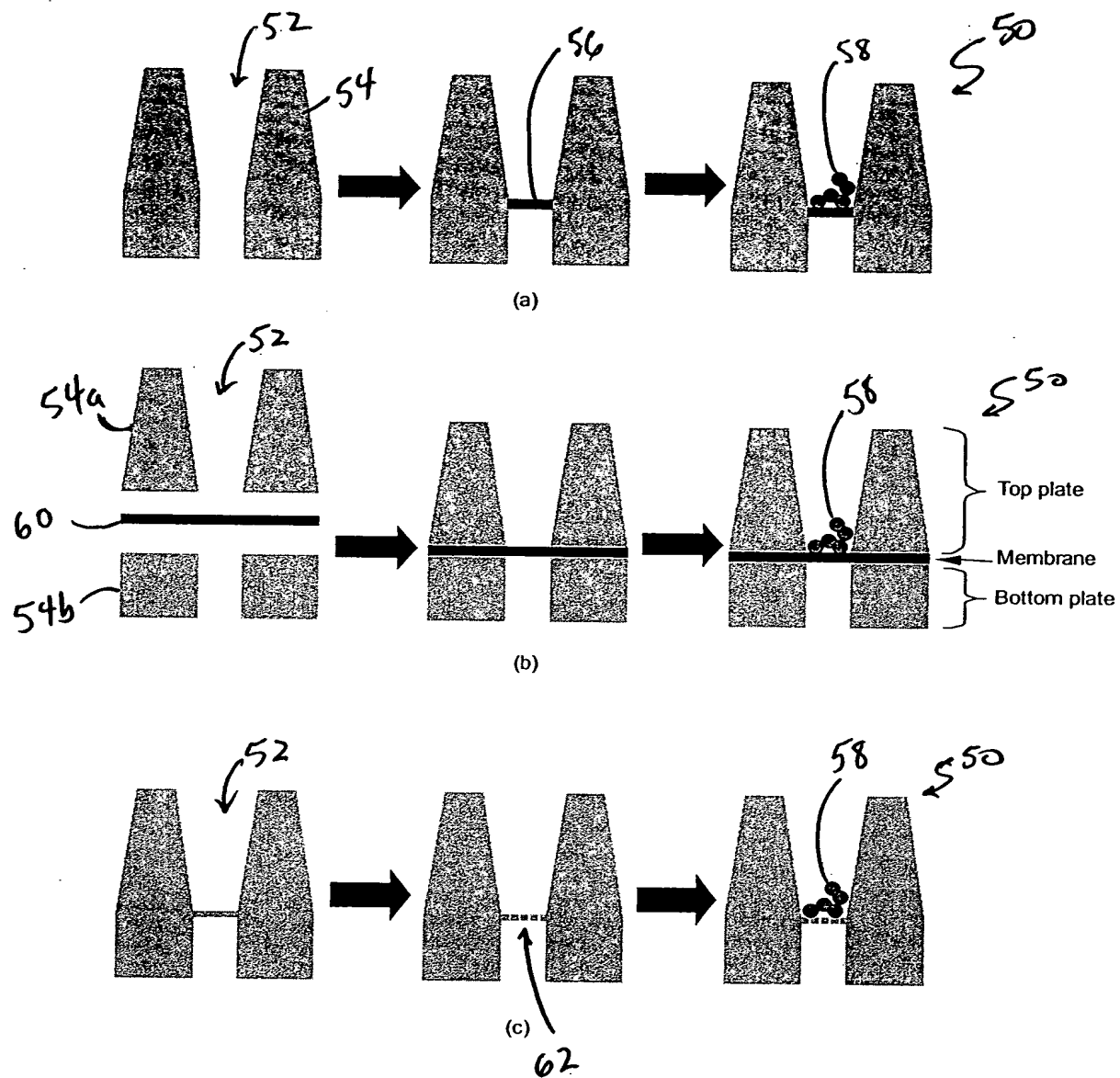


Figure 3

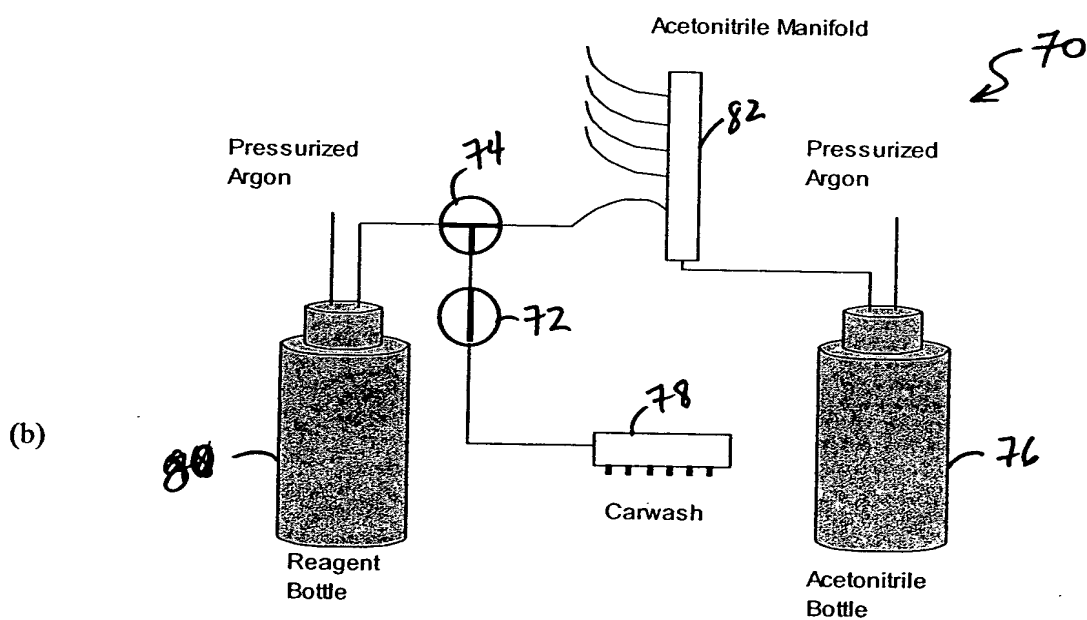
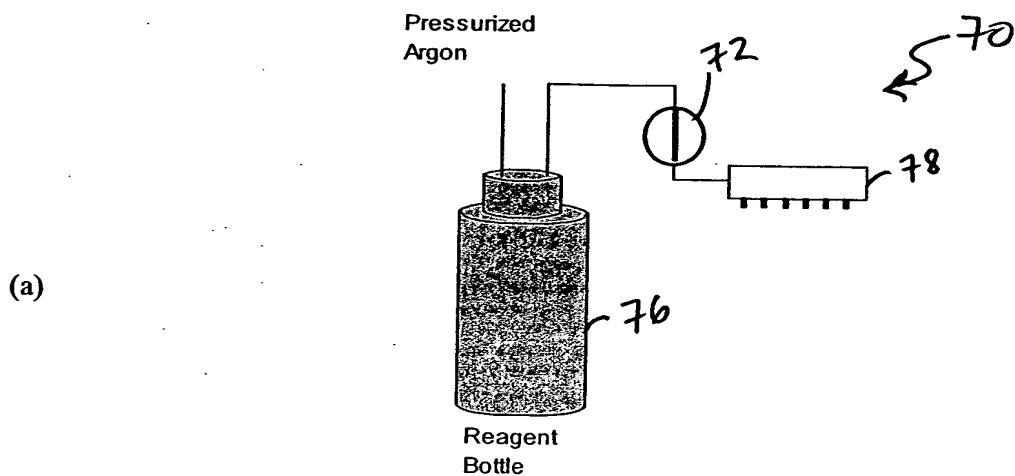


Figure 4

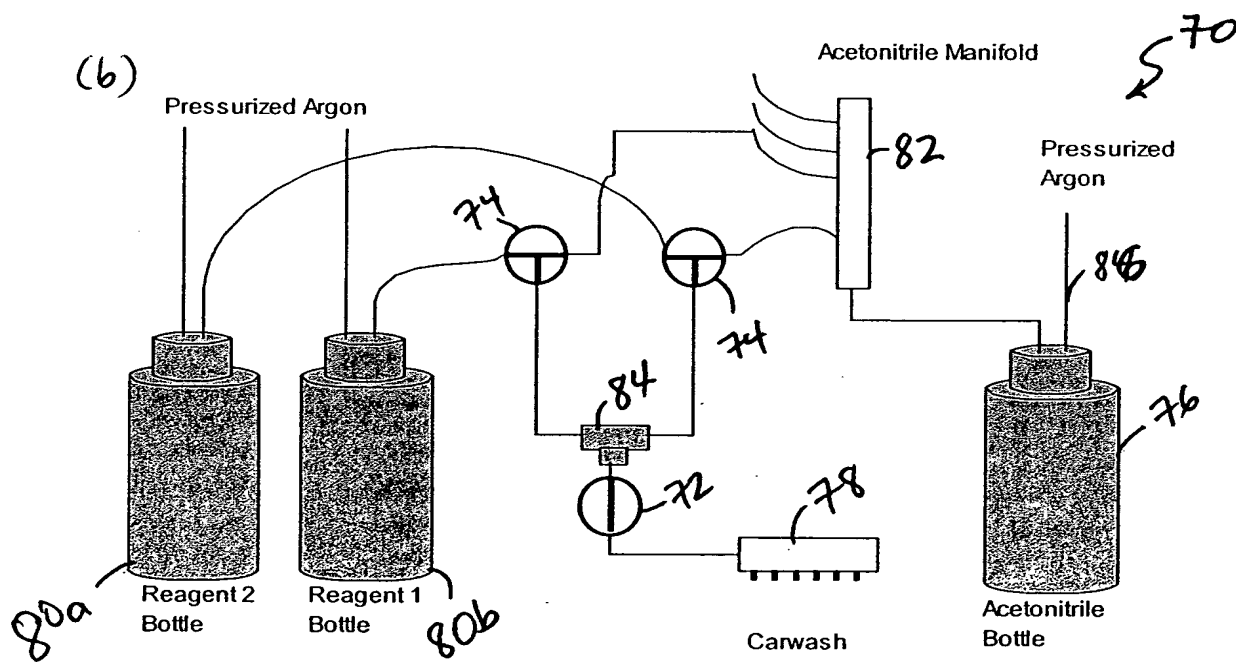
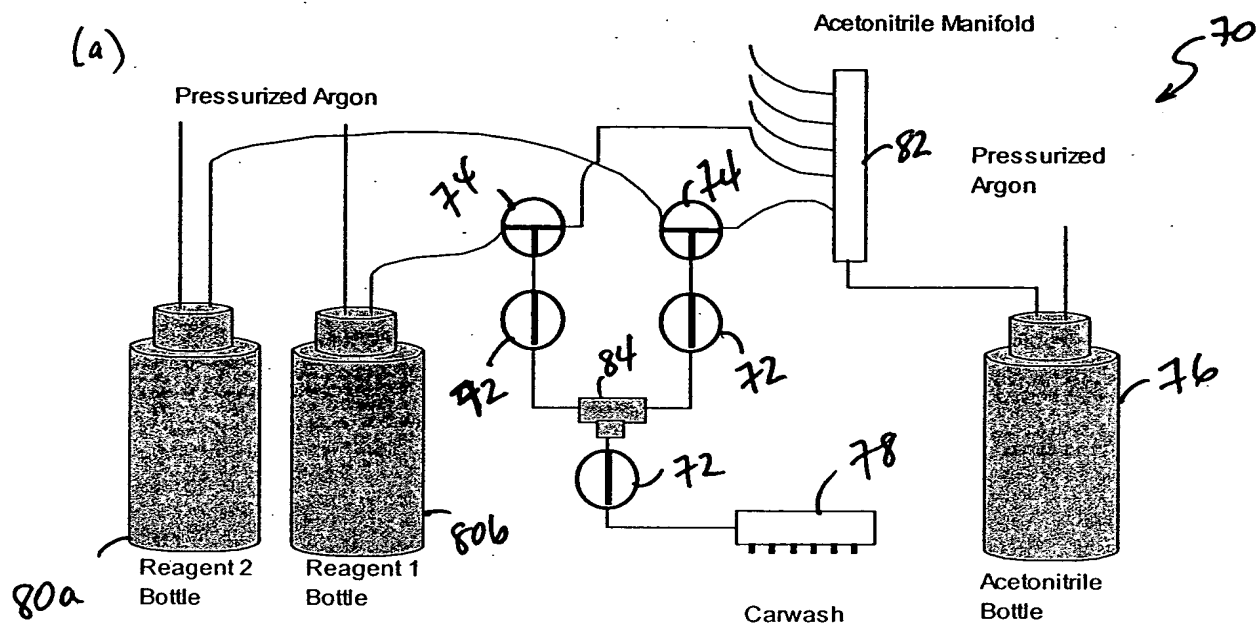


Figure 5

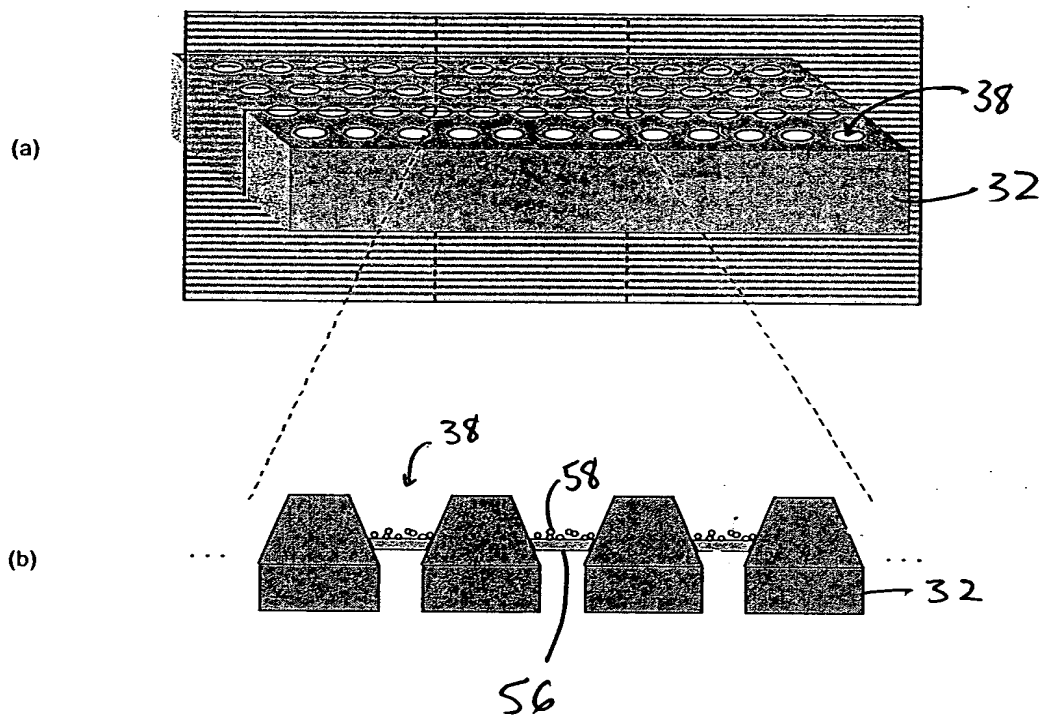


Figure 6

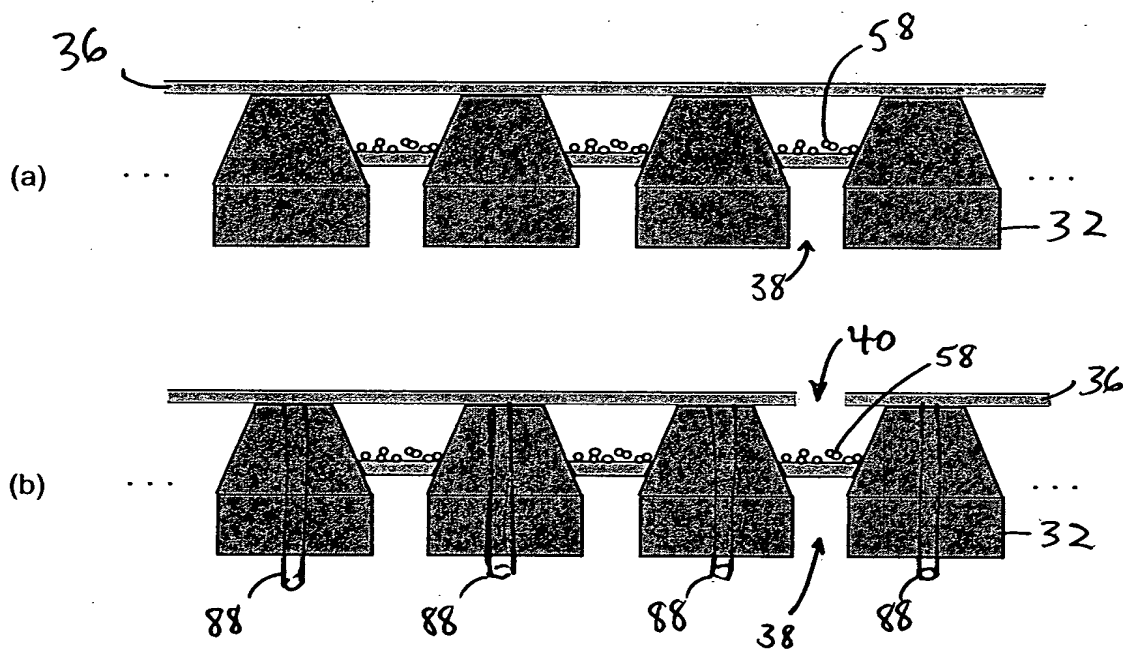


Figure 7

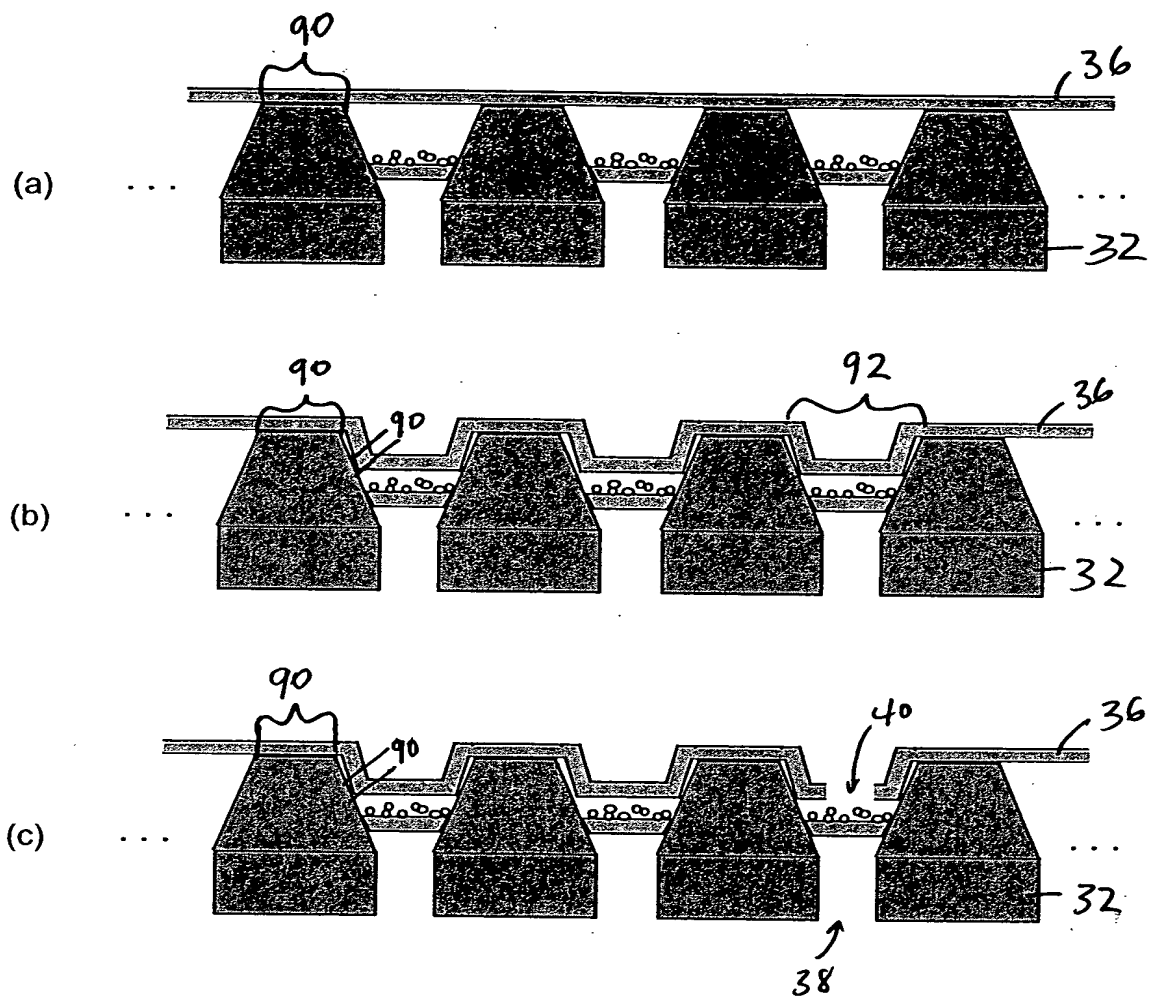


Figure 8

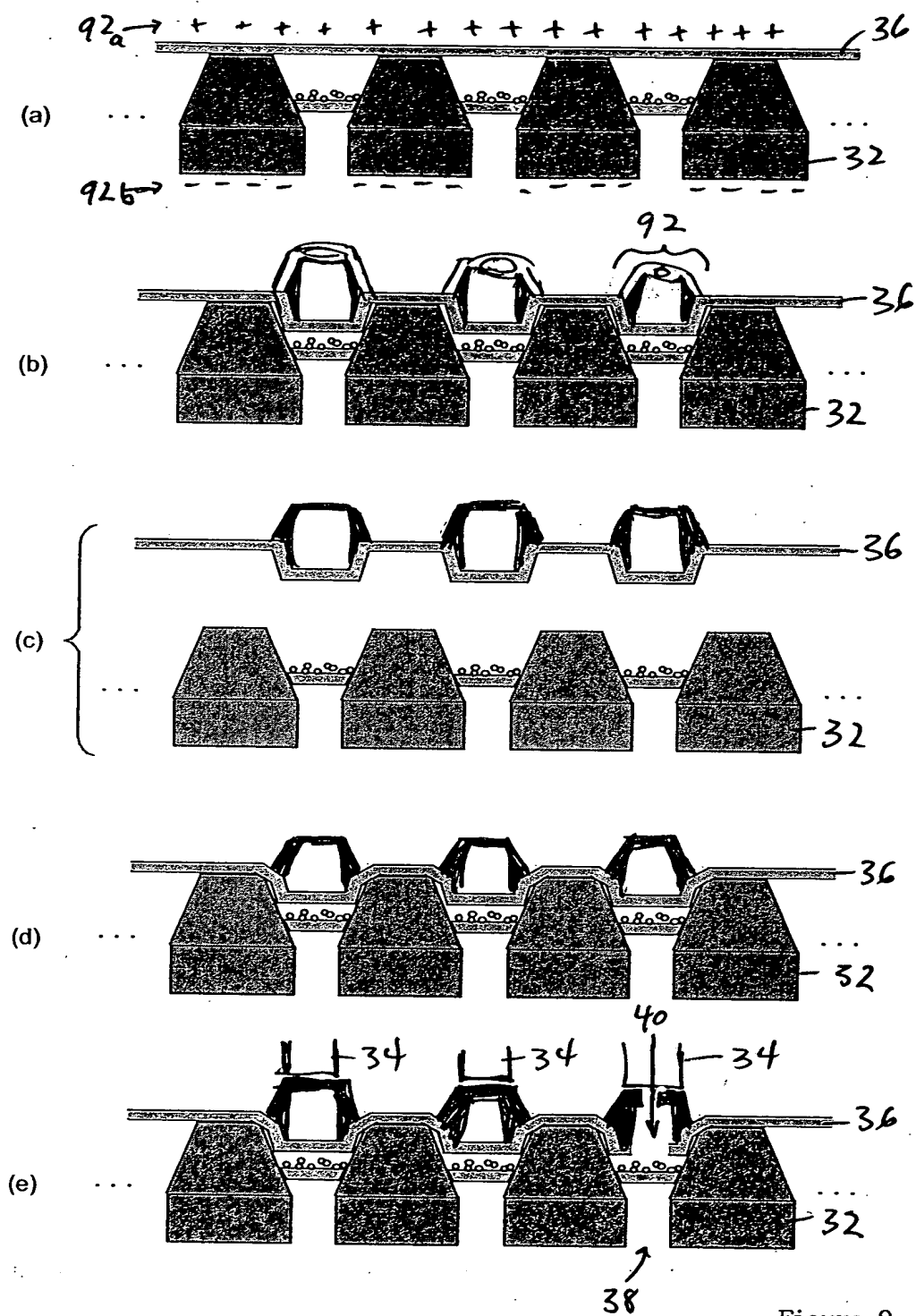


Figure 9

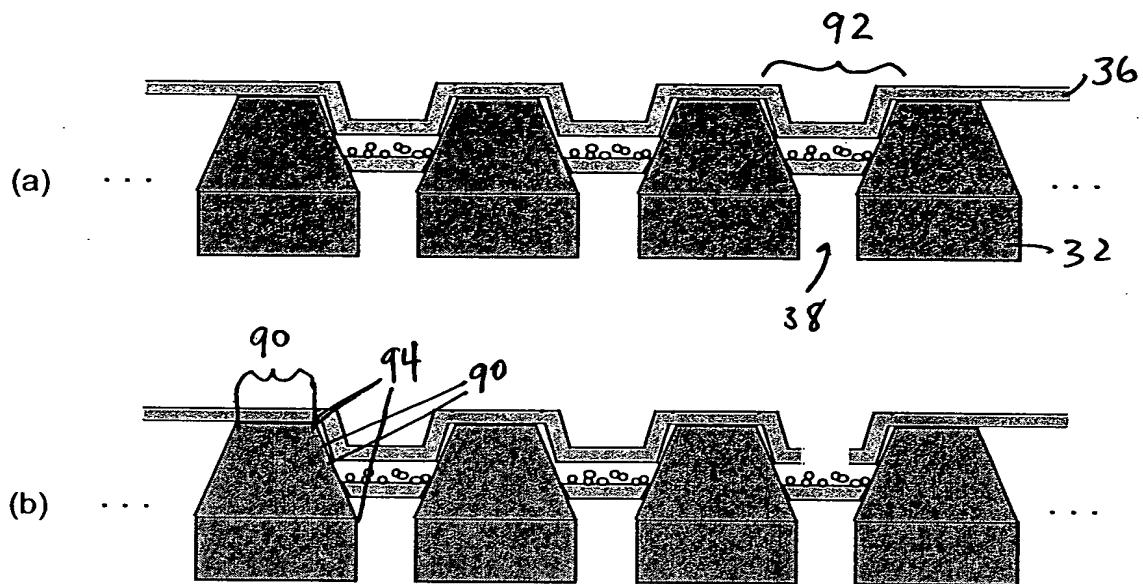


Figure 10

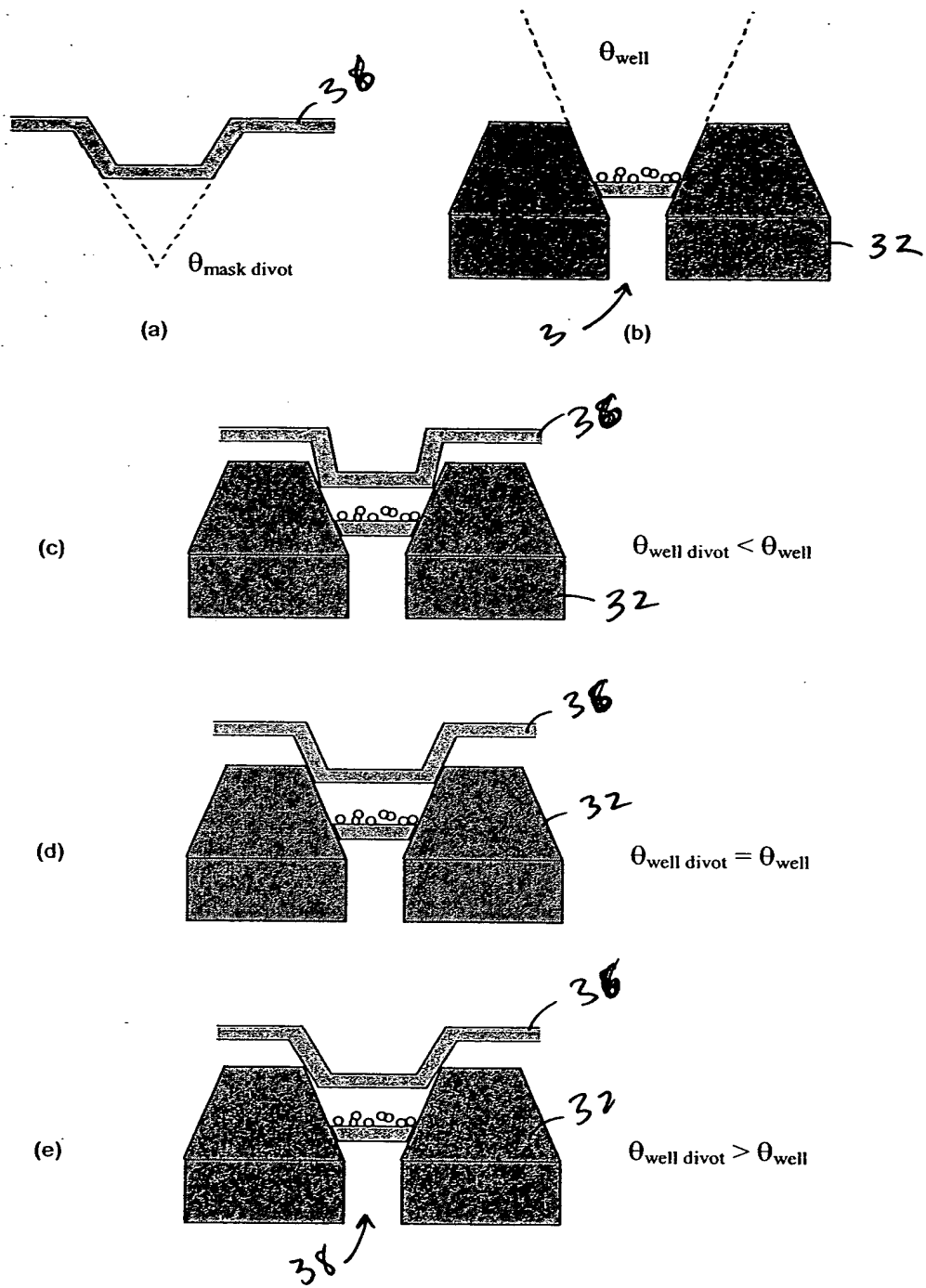


Figure 11

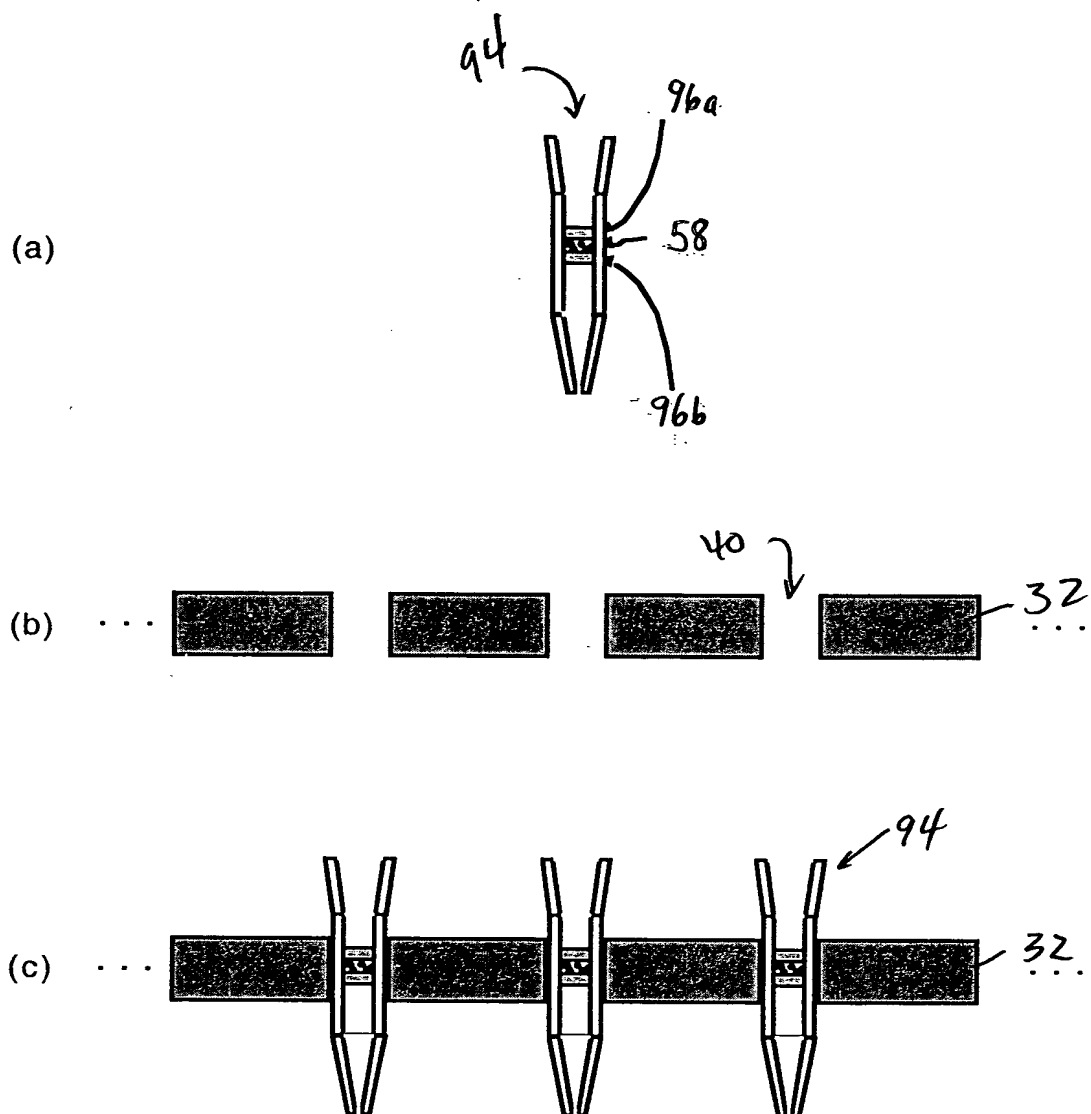


Figure 12

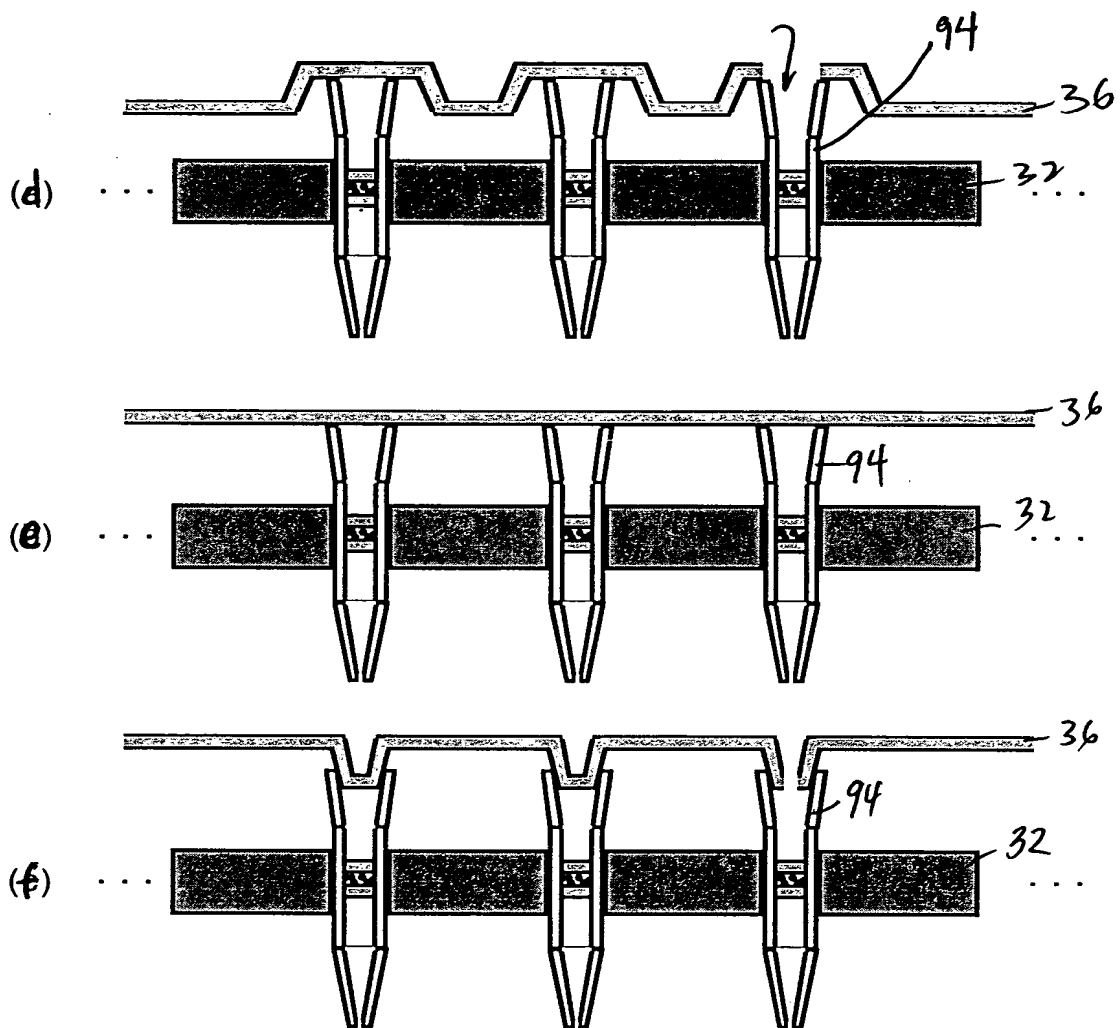


Figure 12 (cont.)

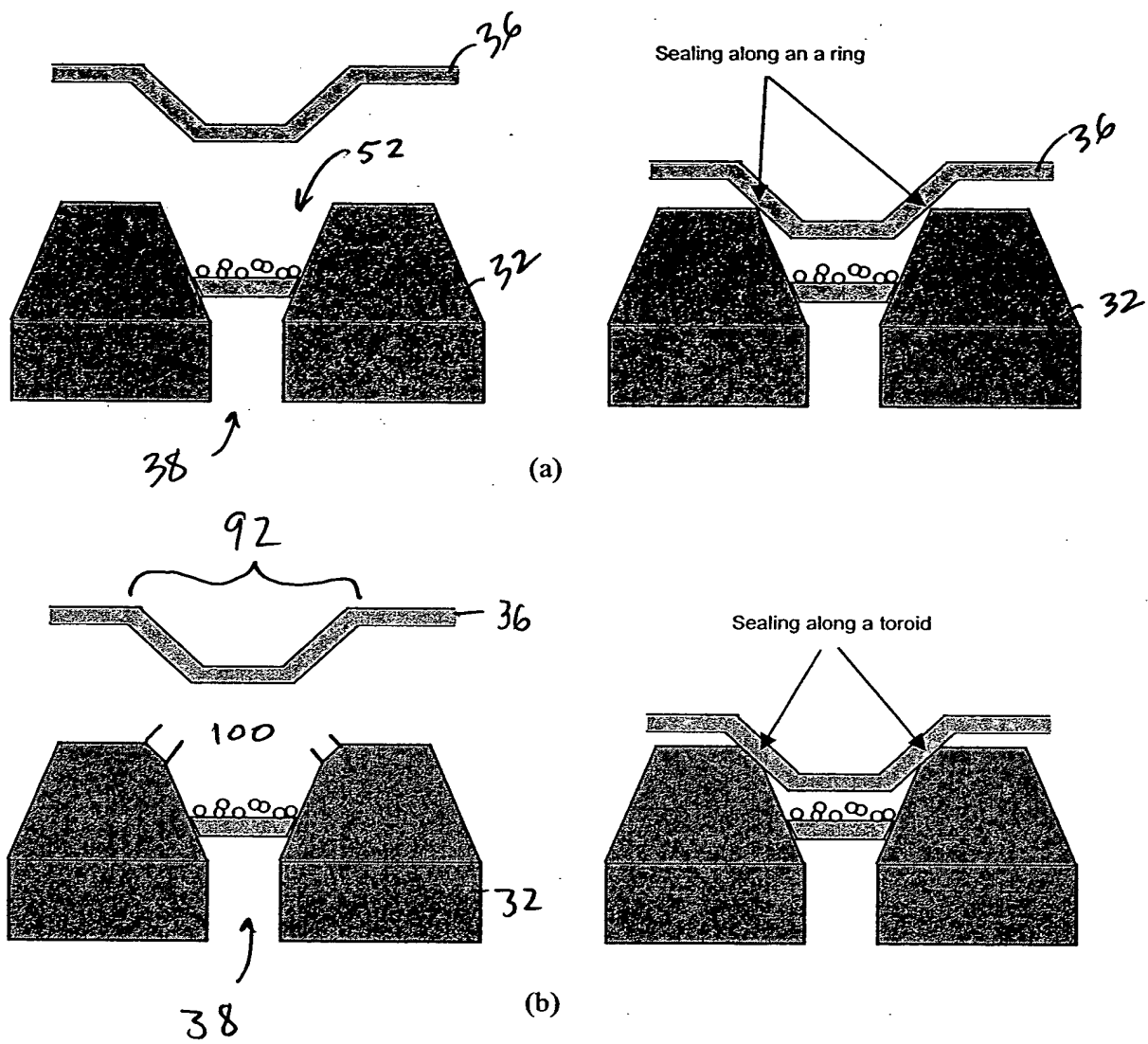
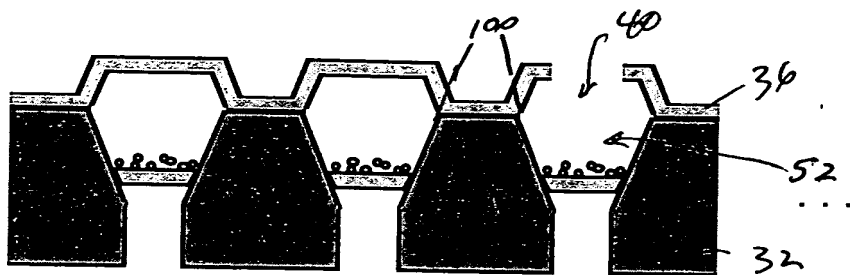
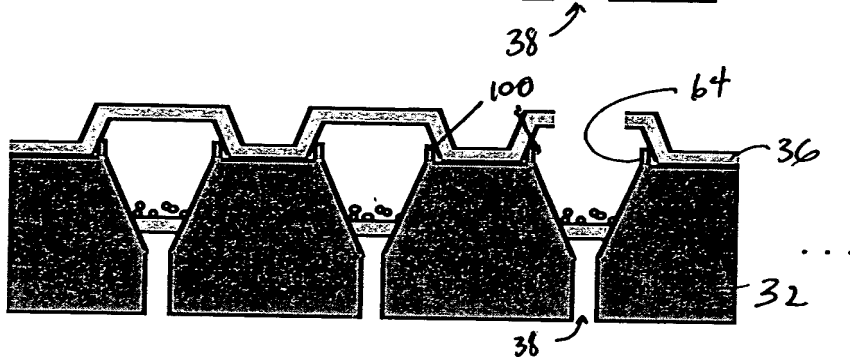


Figure 13

c



d



e

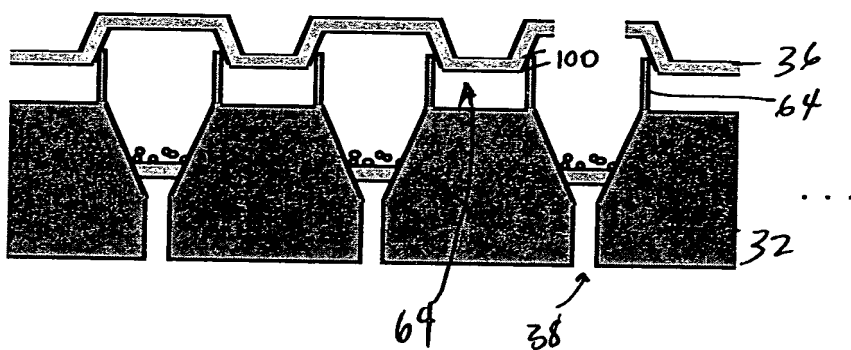


Figure 13 (cont.)

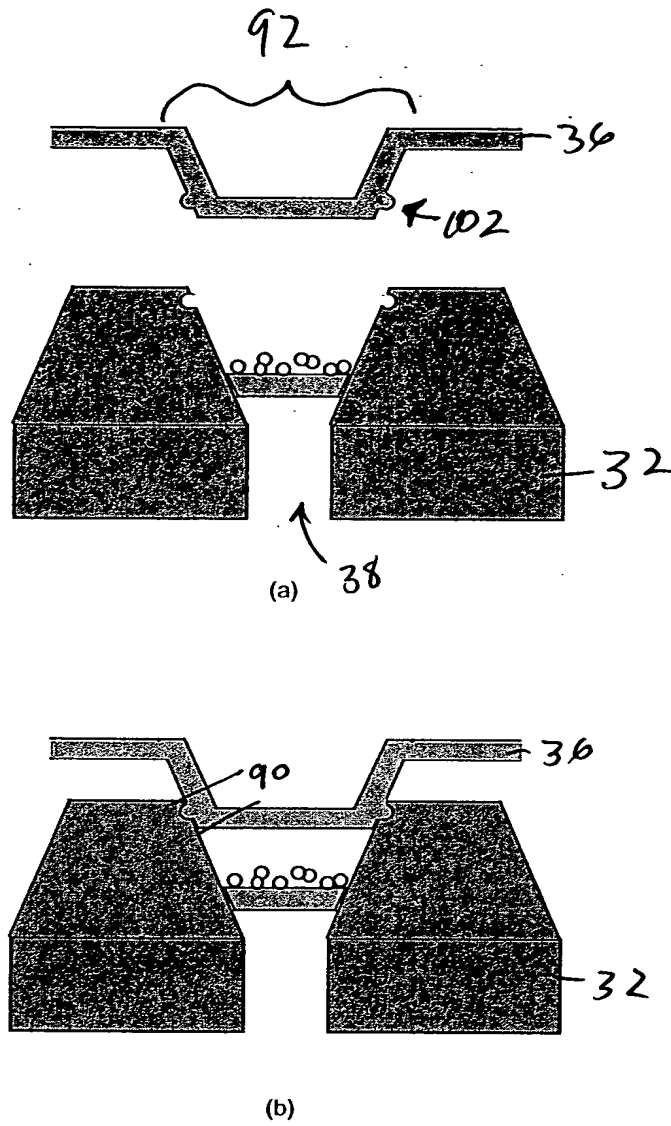


Figure 14

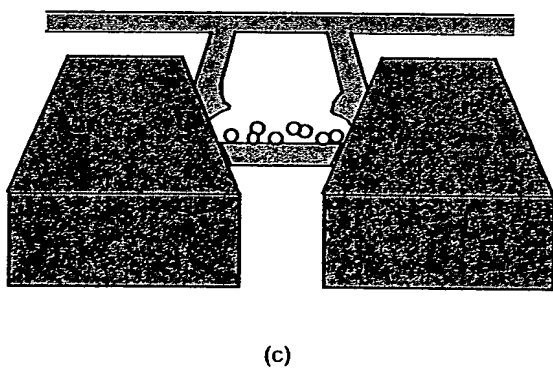
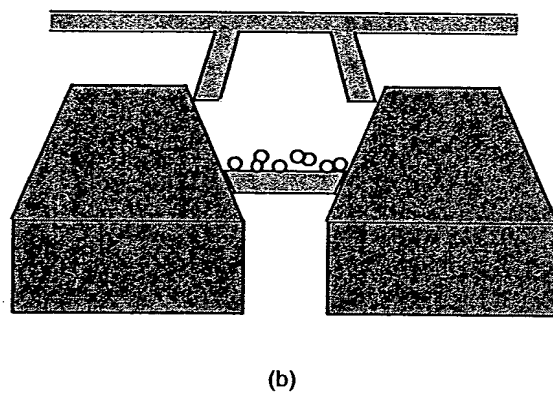
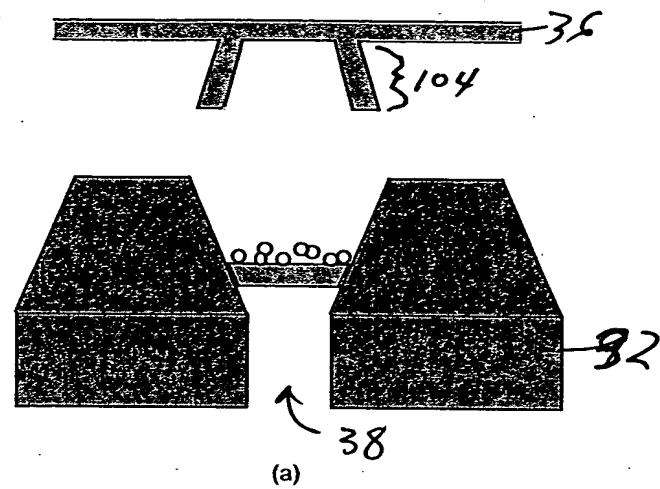


Figure 15

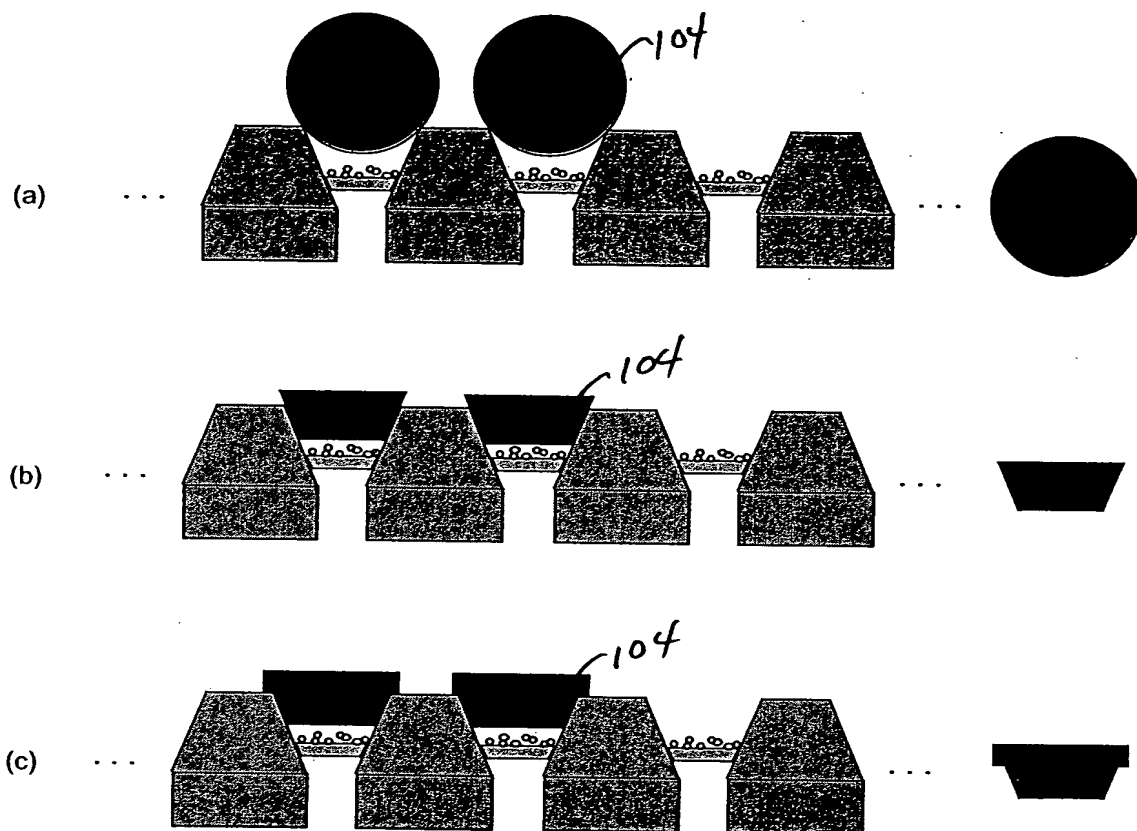


Figure 16

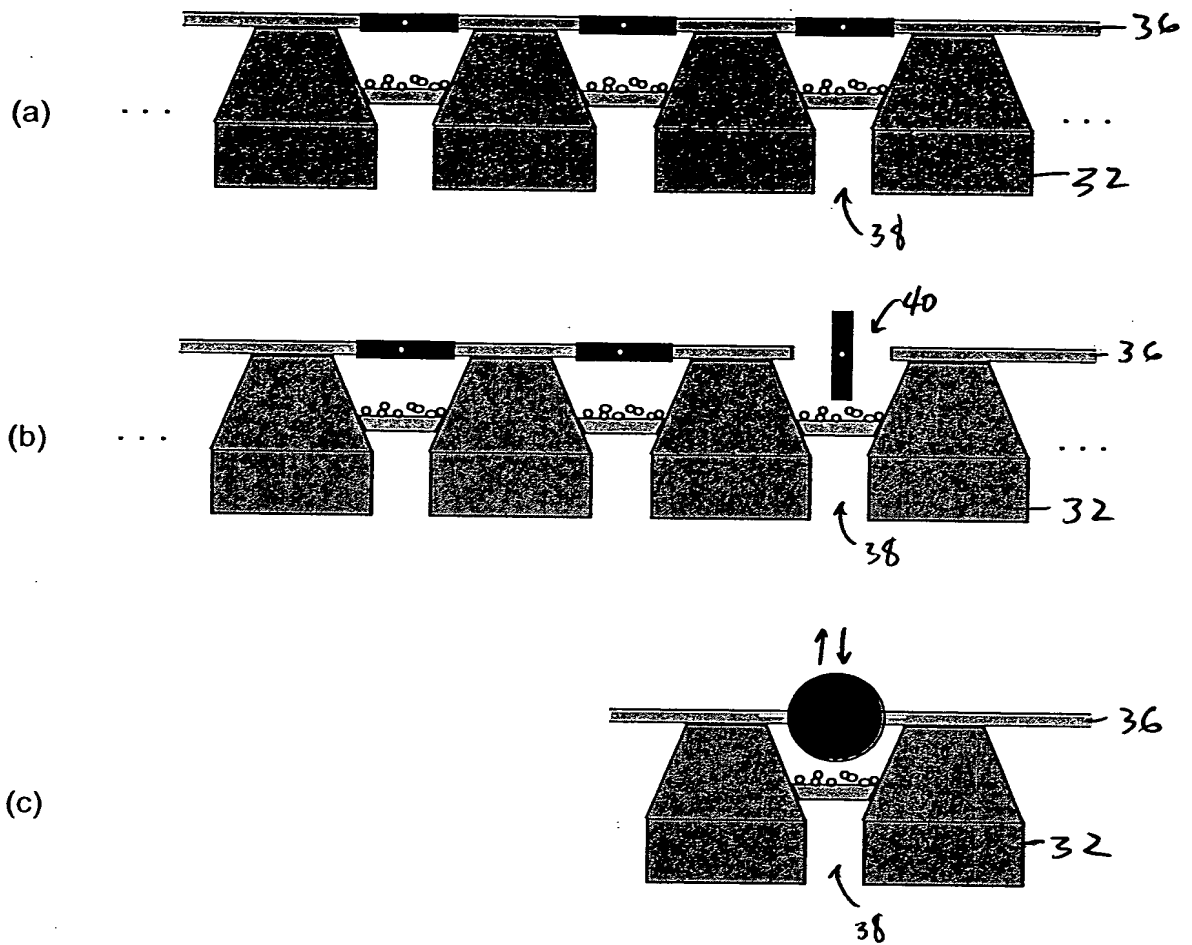


Figure 17

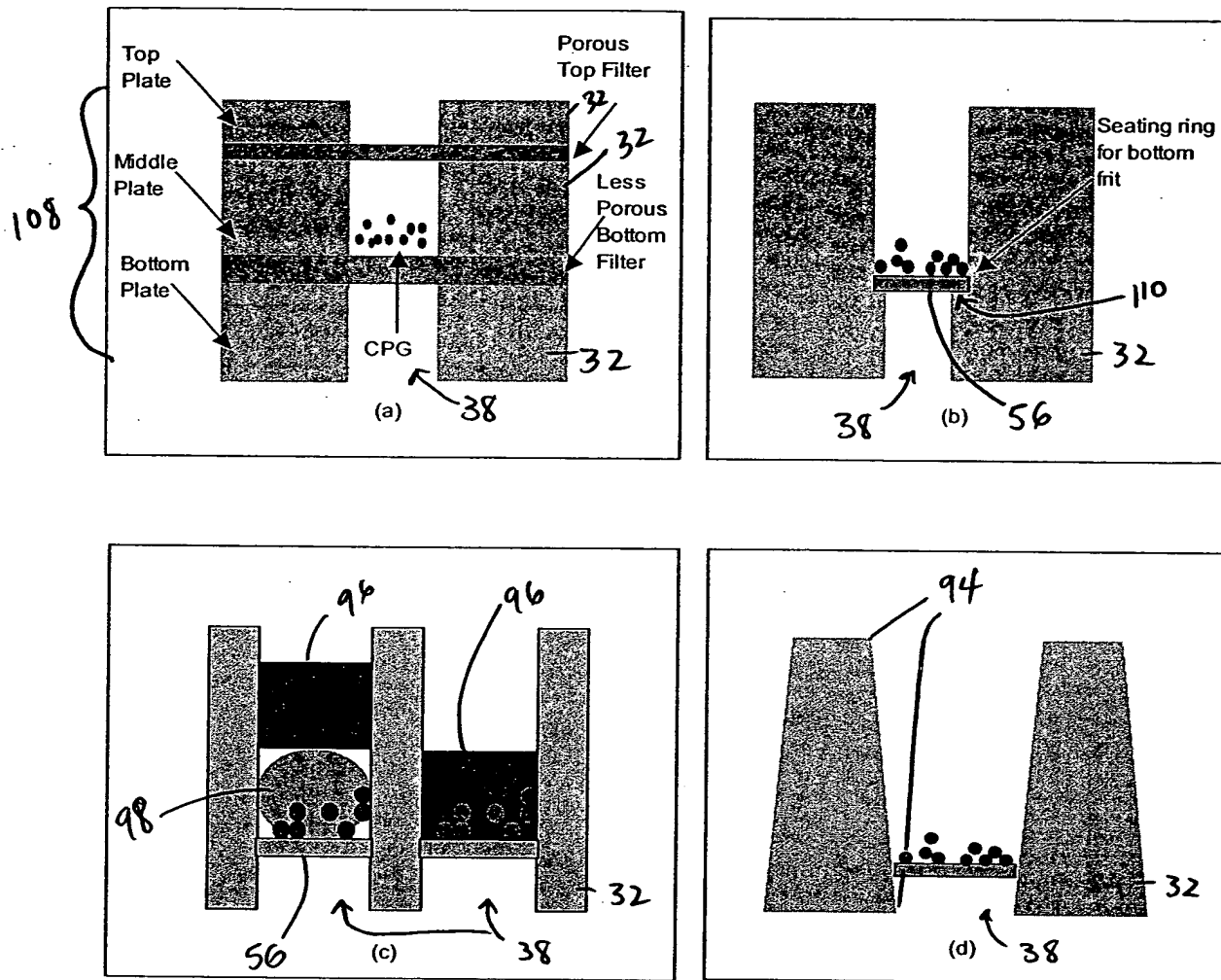


Figure 18

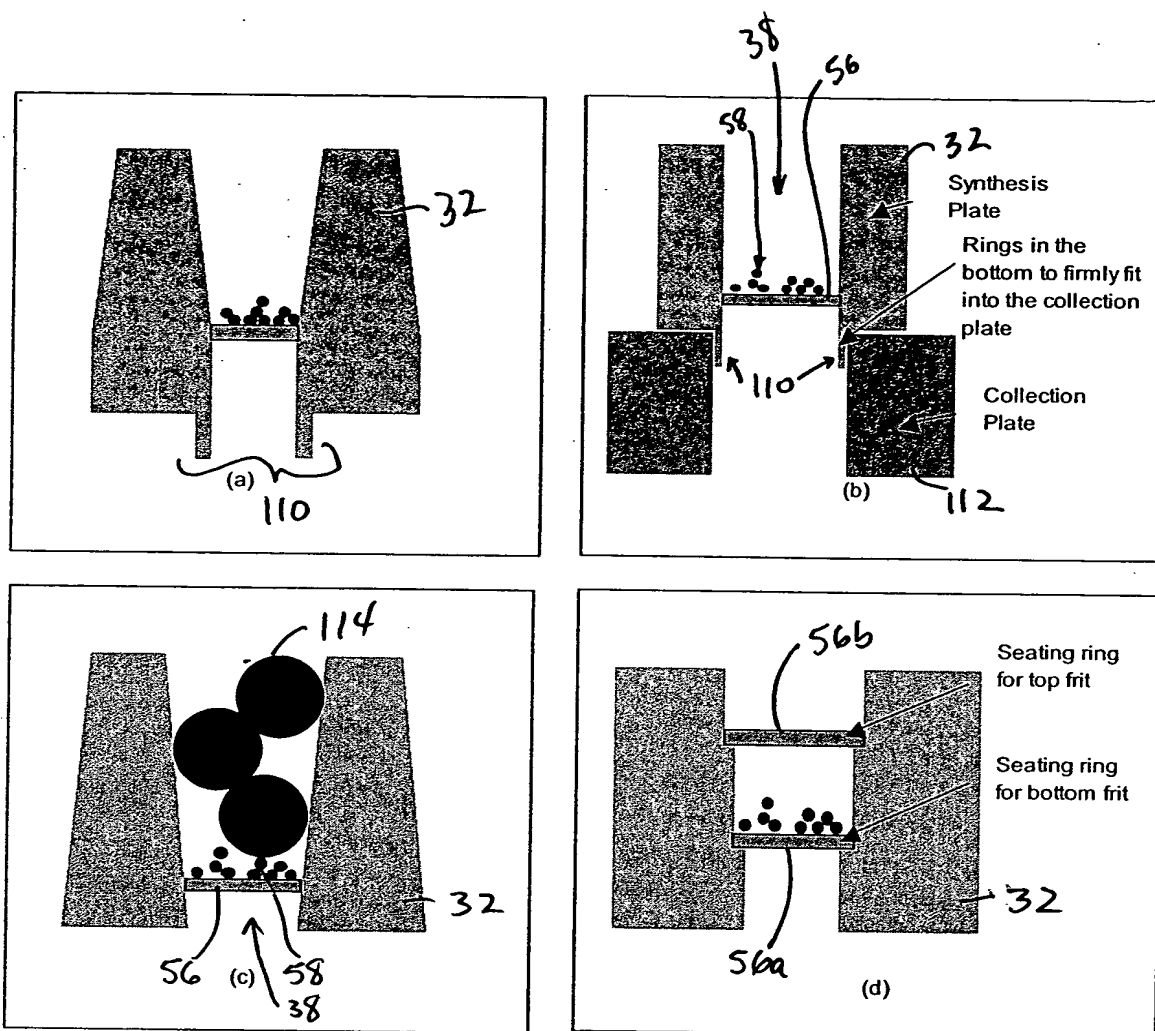


Figure 19

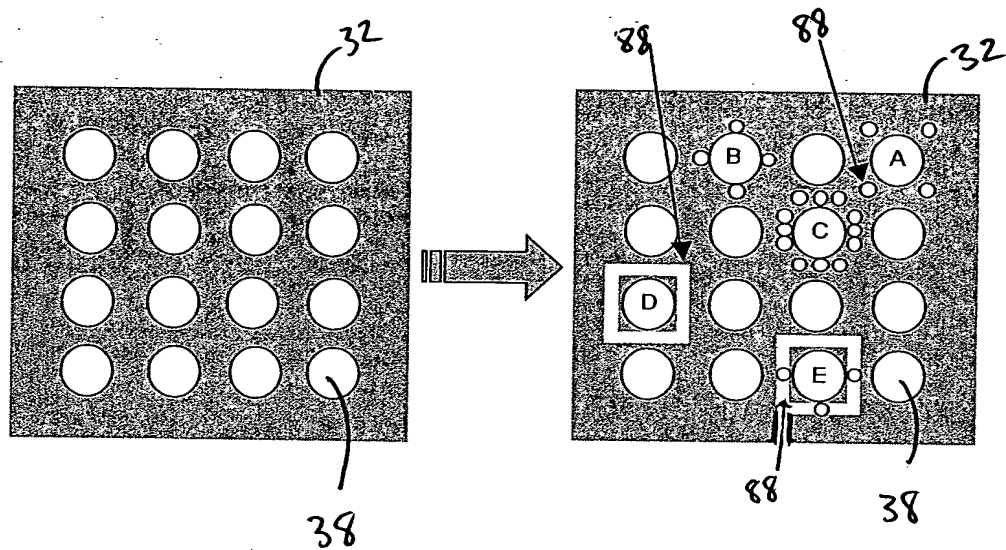


Figure 20

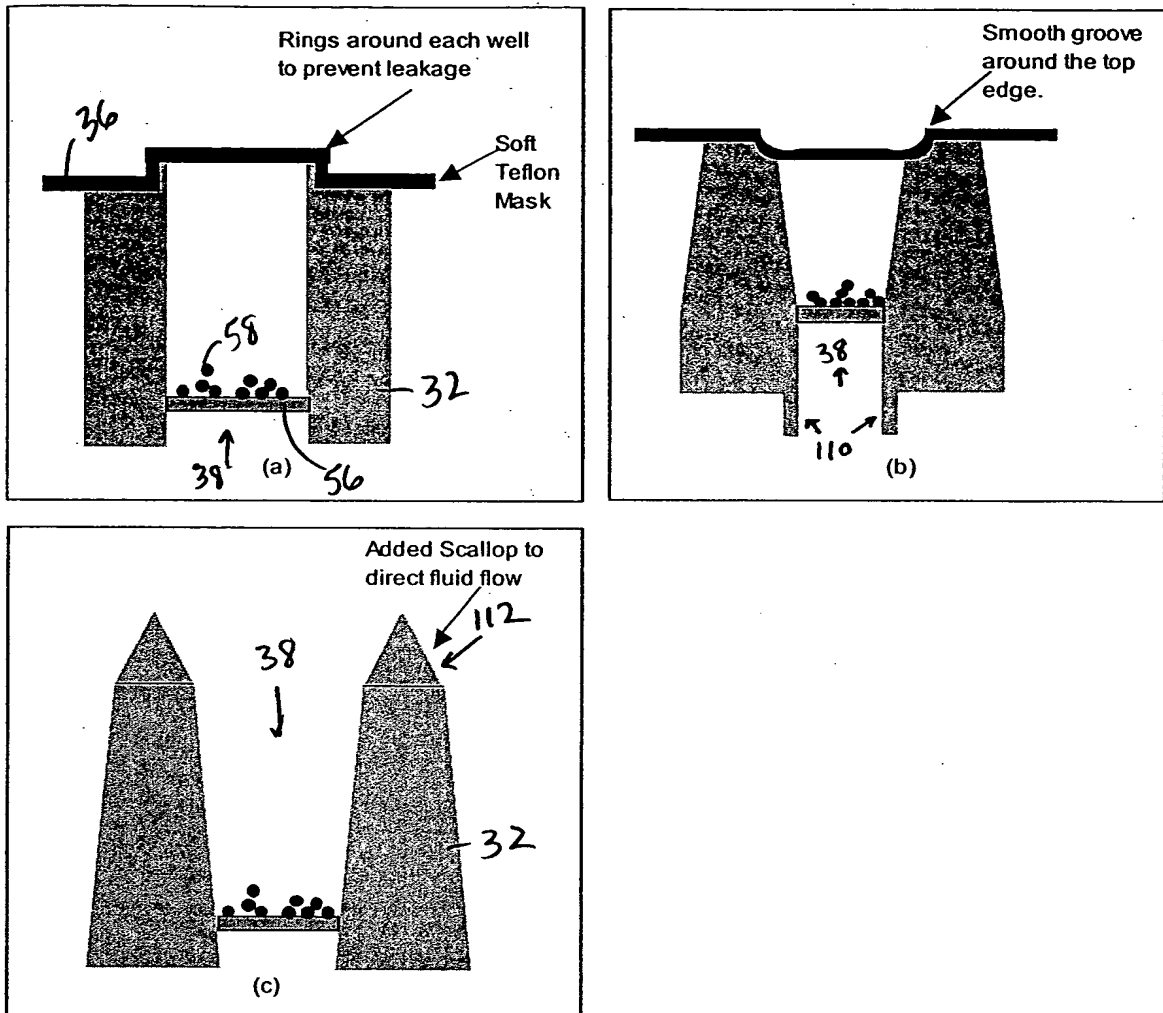


Figure 21

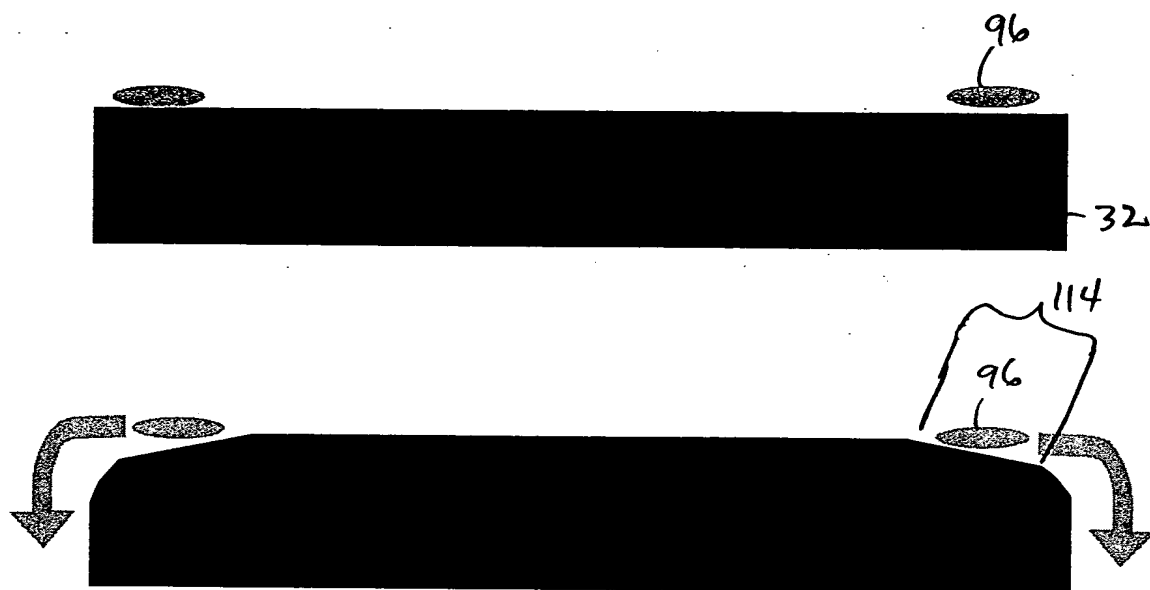


Figure 22

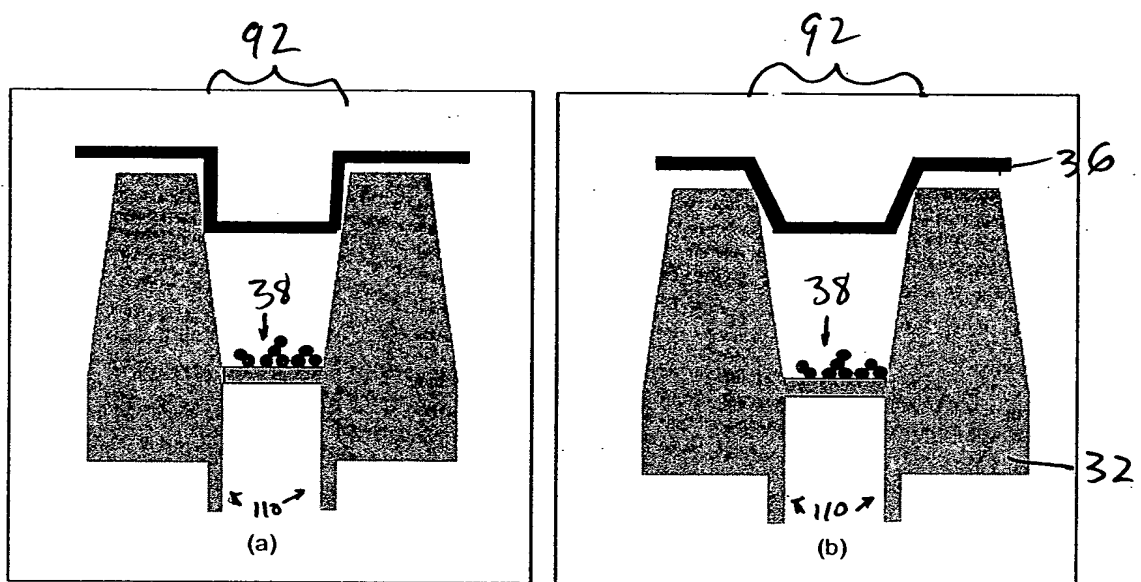


Figure 23

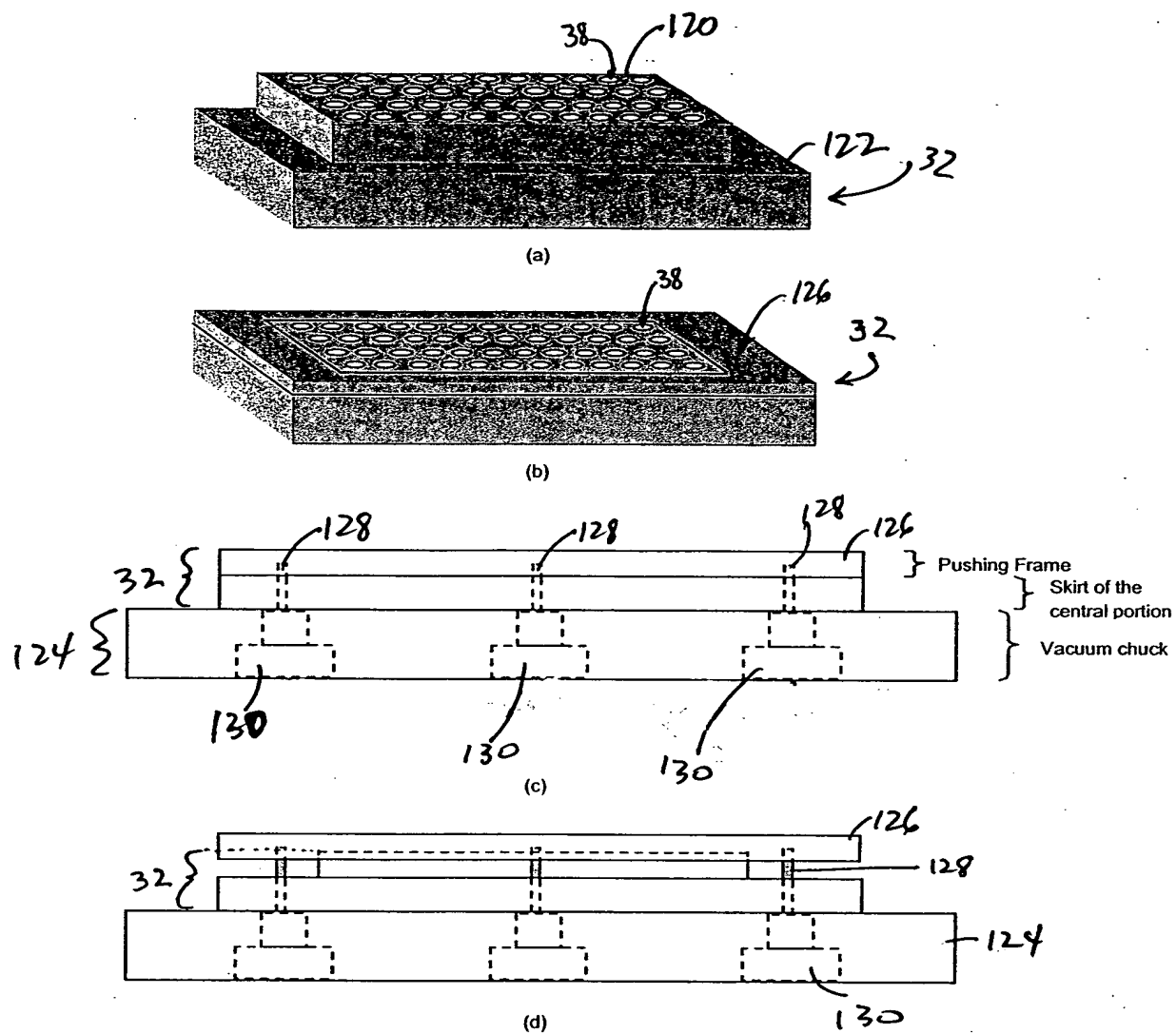


Figure 24

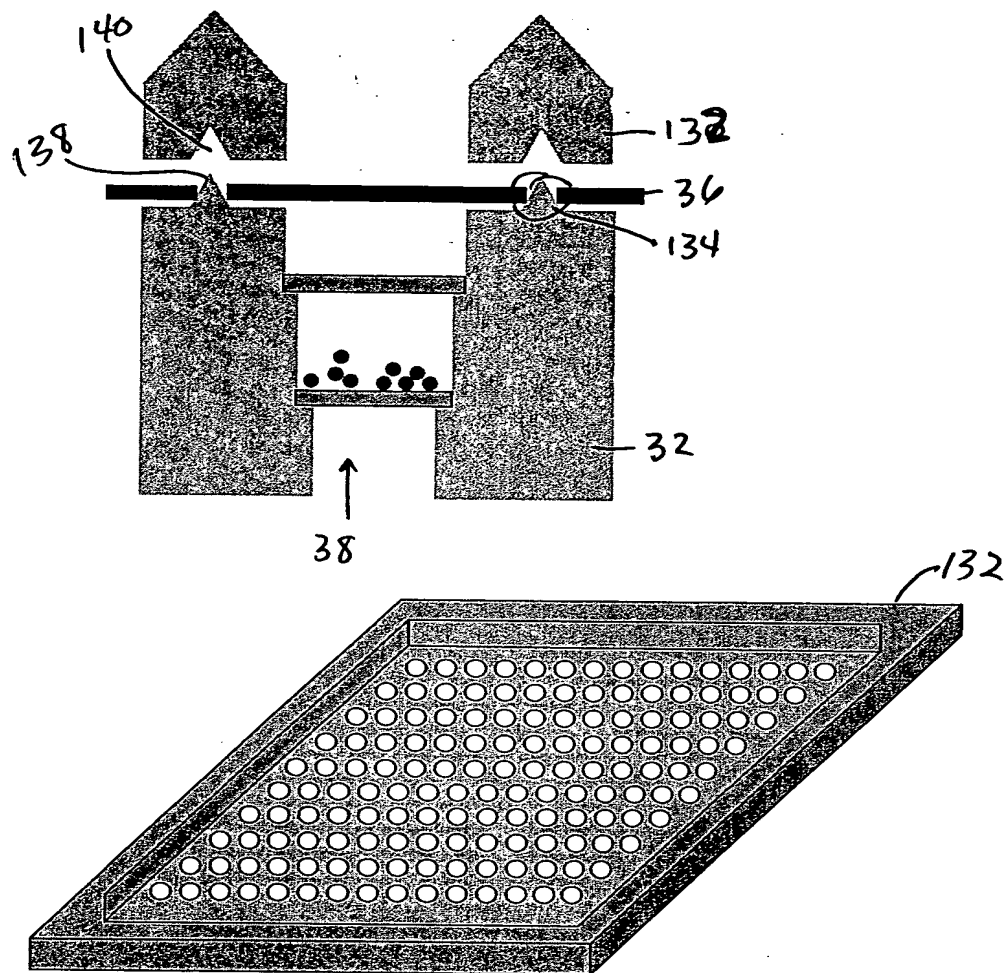


Figure 25

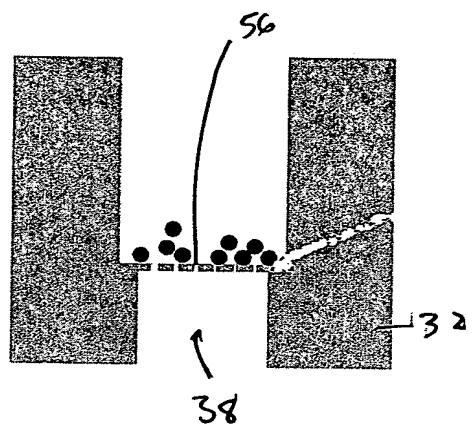


Figure 26

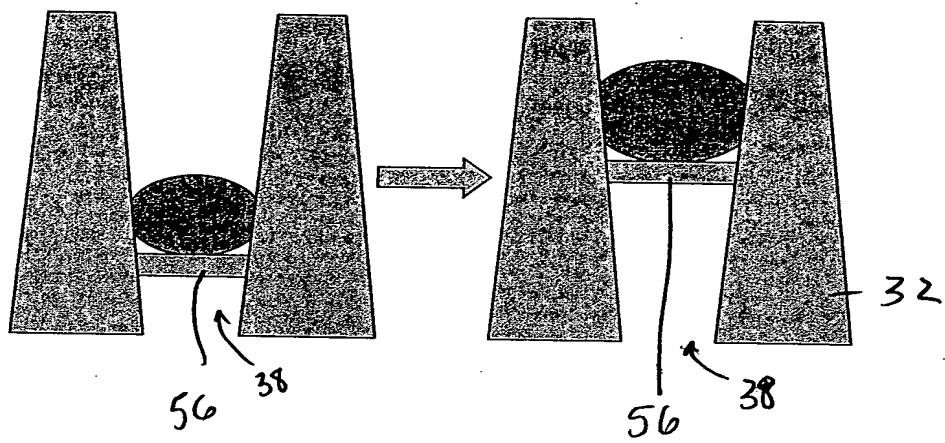


Figure 27

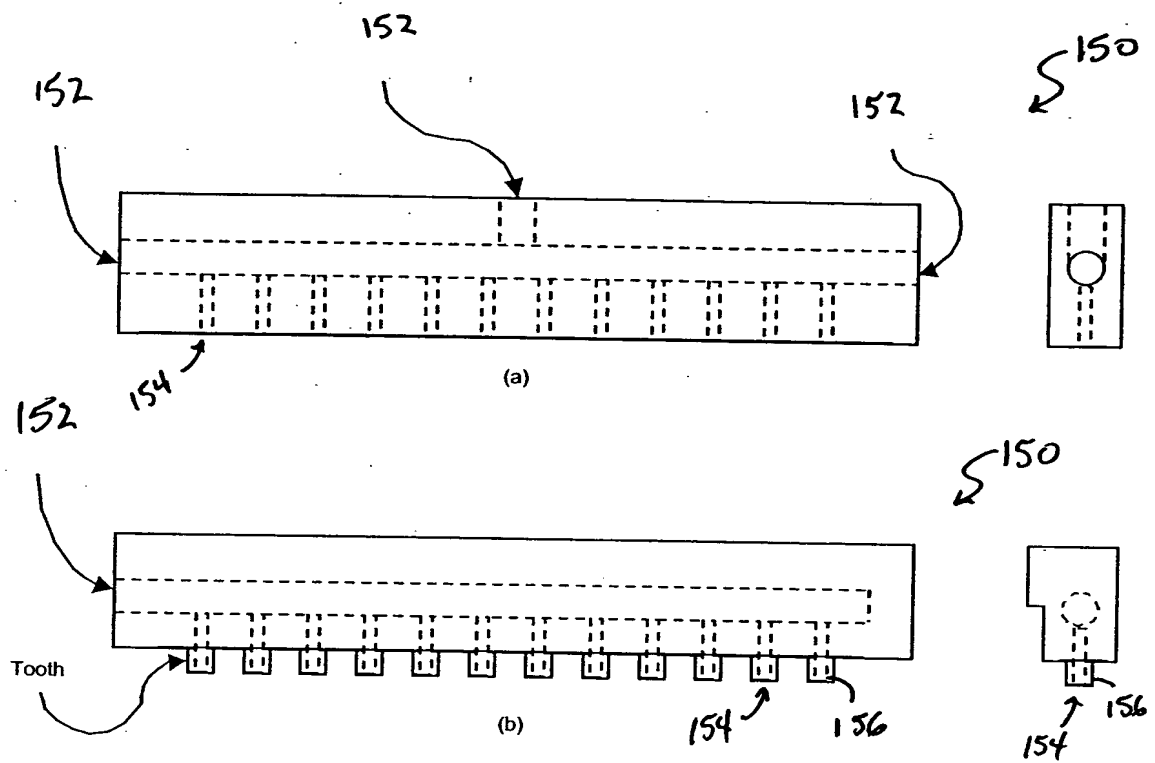
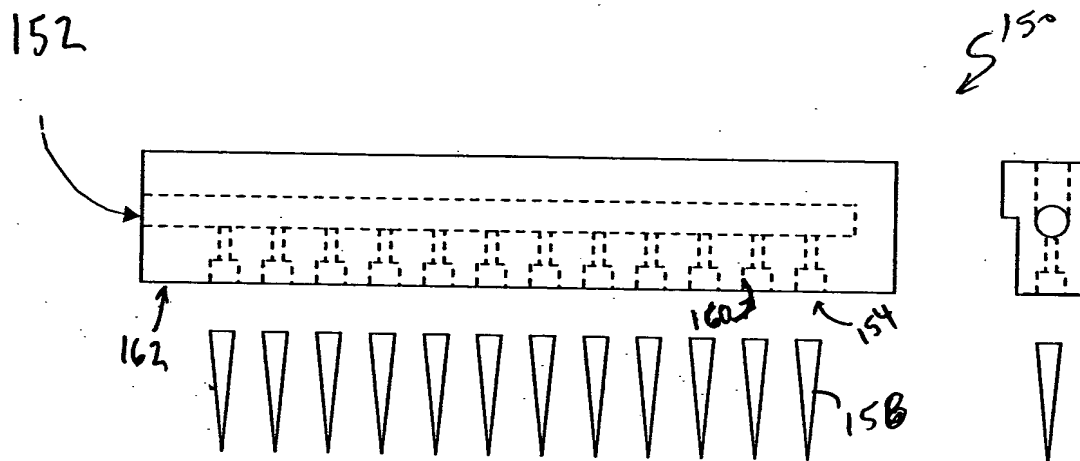
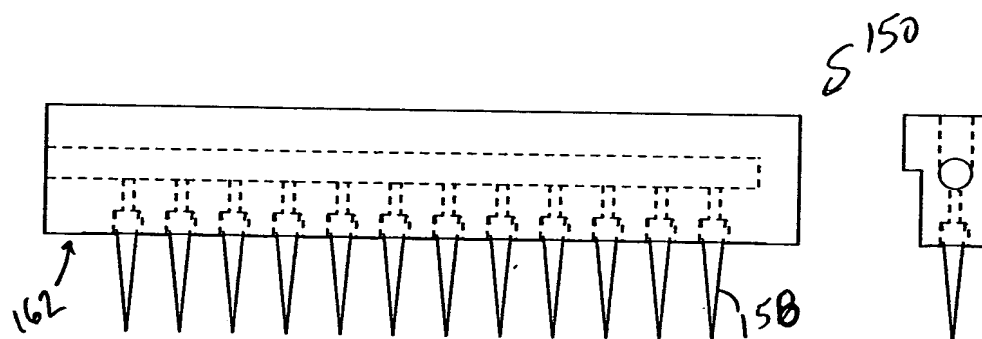


Figure 28



(a)



(b)

Figure 29

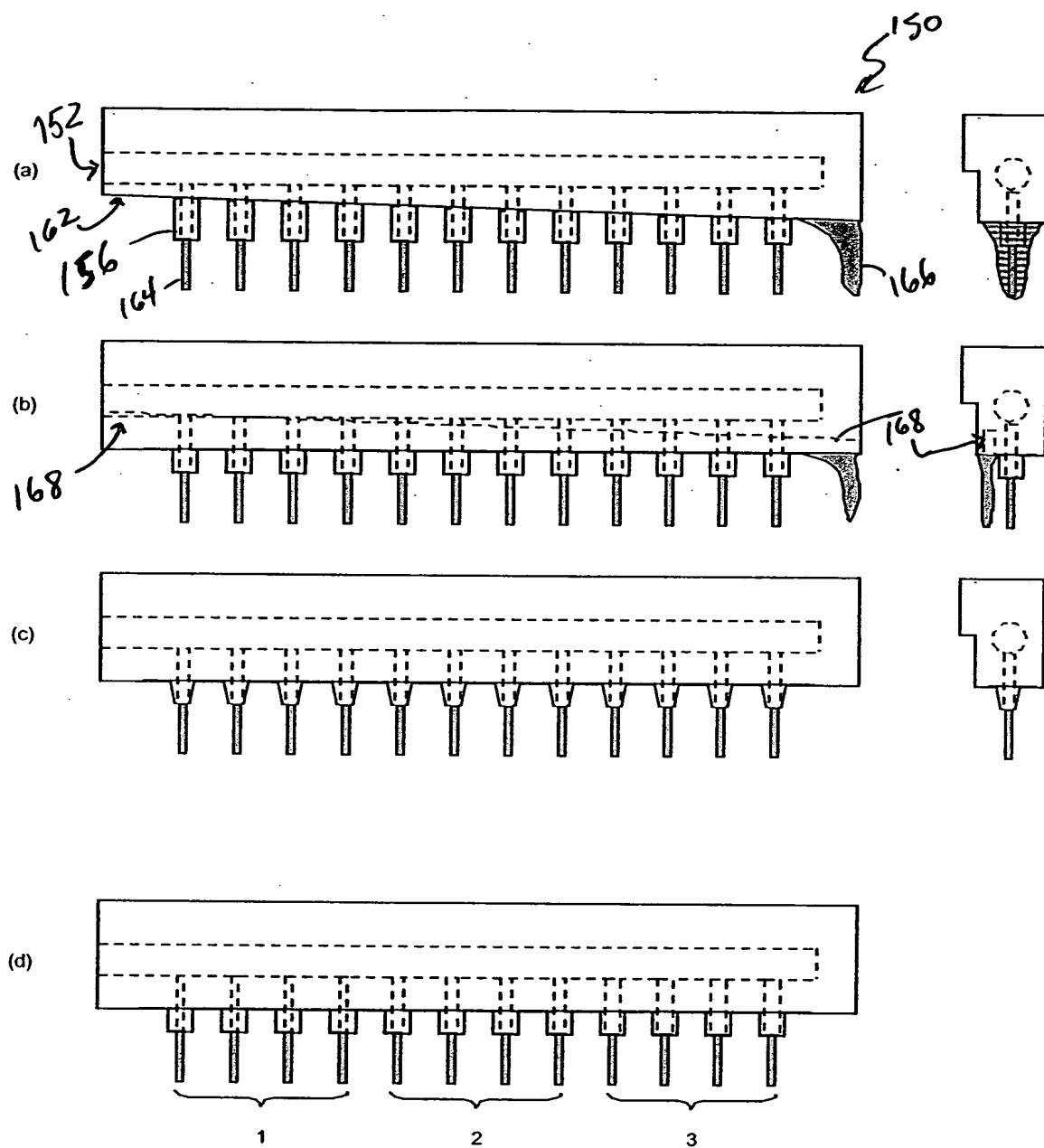


Figure 30

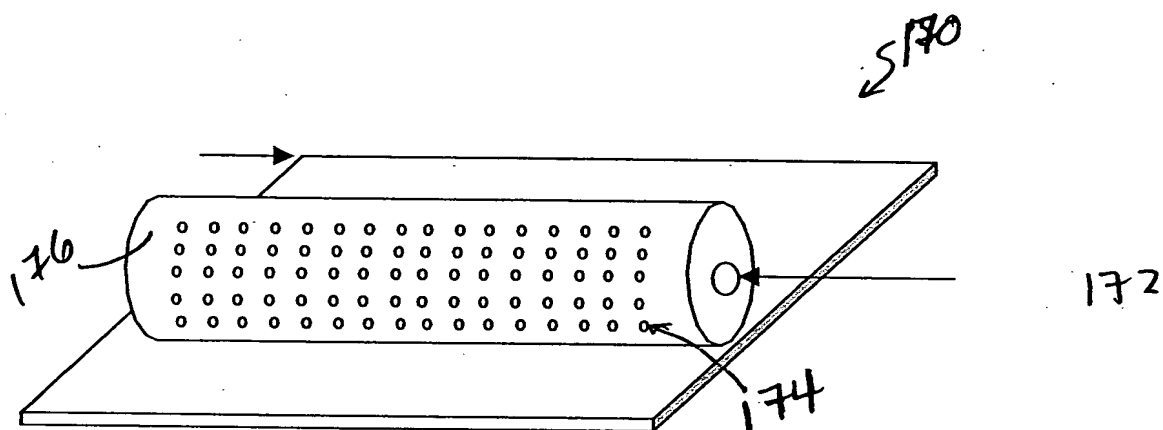


Figure 31

Step	Wait Time (ms)	Prime?	Flush?	Vacuum
0 DEBLOCK	35000	Yes	No	NOT_AT_ALL
1 DEBLOCK	35000	No	No	NOT_AT_ALL
2 DEBLOCK	30000	No	No	FOLLOWING
3 DEBLOCK	30000	No	No	NOT_AT_ALL
4 DEBLOCK	30000	No	No	NOT_AT_ALL
5 DEBLOCK	30000	No	Yes	FOLLOWING
6 ACETONITRILE_WASH	5100	No	No	FOLLOWING
7 ACETONITRILE_WASH	20100	No	No	FOLLOWING
8 ACETONITRILE_WASH	5100	No	No	FOLLOWING
9 ACETONITRILE_WASH	5100	No	No	FOLLOWING
10 COUPLE	35000	Yes	No	NOT_AT_ALL
11 COUPLE	35000	No	No	FOLLOWING
12 COUPLE	35000	No	Yes	FOLLOWING
13 ACETONITRILE_WASH	5100	No	No	FOLLOWING
14 ACETONITRILE_WASH	20100	No	No	FOLLOWING
15 ACETONITRILE_WASH	5100	No	No	FOLLOWING
16 ACETONITRILE_WASH	5100	No	No	FOLLOWING
17 CAP	30000	Yes	No	NOT_AT_ALL
18 CAP	30000	No	Yes	FOLLOWING
19 ACETONITRILE_WASH	5100	No	No	FOLLOWING
20 ACETONITRILE_WASH	20100	No	No	FOLLOWING
21 ACETONITRILE_WASH	5100	No	No	FOLLOWING
22 ACETONITRILE_WASH	5100	No	No	FOLLOWING
23 OXIDIZE	30000	Yes	No	NOT_AT_ALL
24 OXIDIZE	30000	No	Yes	FOLLOWING
25 ACETONITRILE_WASH	5100	No	No	FOLLOWING
26 ACETONITRILE_WASH	5100	No	No	FOLLOWING
27 ACETONITRILE_WASH	20100	No	No	FOLLOWING
28 ACETONITRILE_WASH	5100	No	No	FOLLOWING
29 ACETONITRILE_WASH	5100	No	No	FOLLOWING
30 ACETONITRILE_WASH	5100	No	No	DURING
31 ACETONITRILE_WASH	100	No	No	DURING
32 ACETONITRILE_WASH	100	No	No	DURING

Figure 32

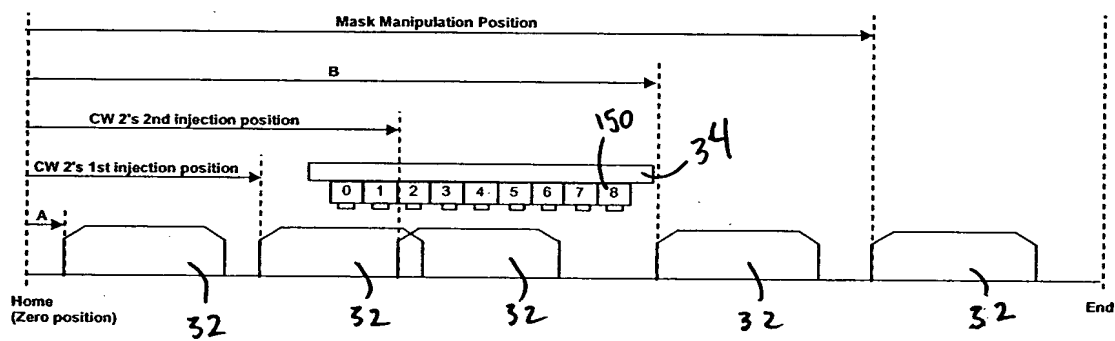


Figure 33

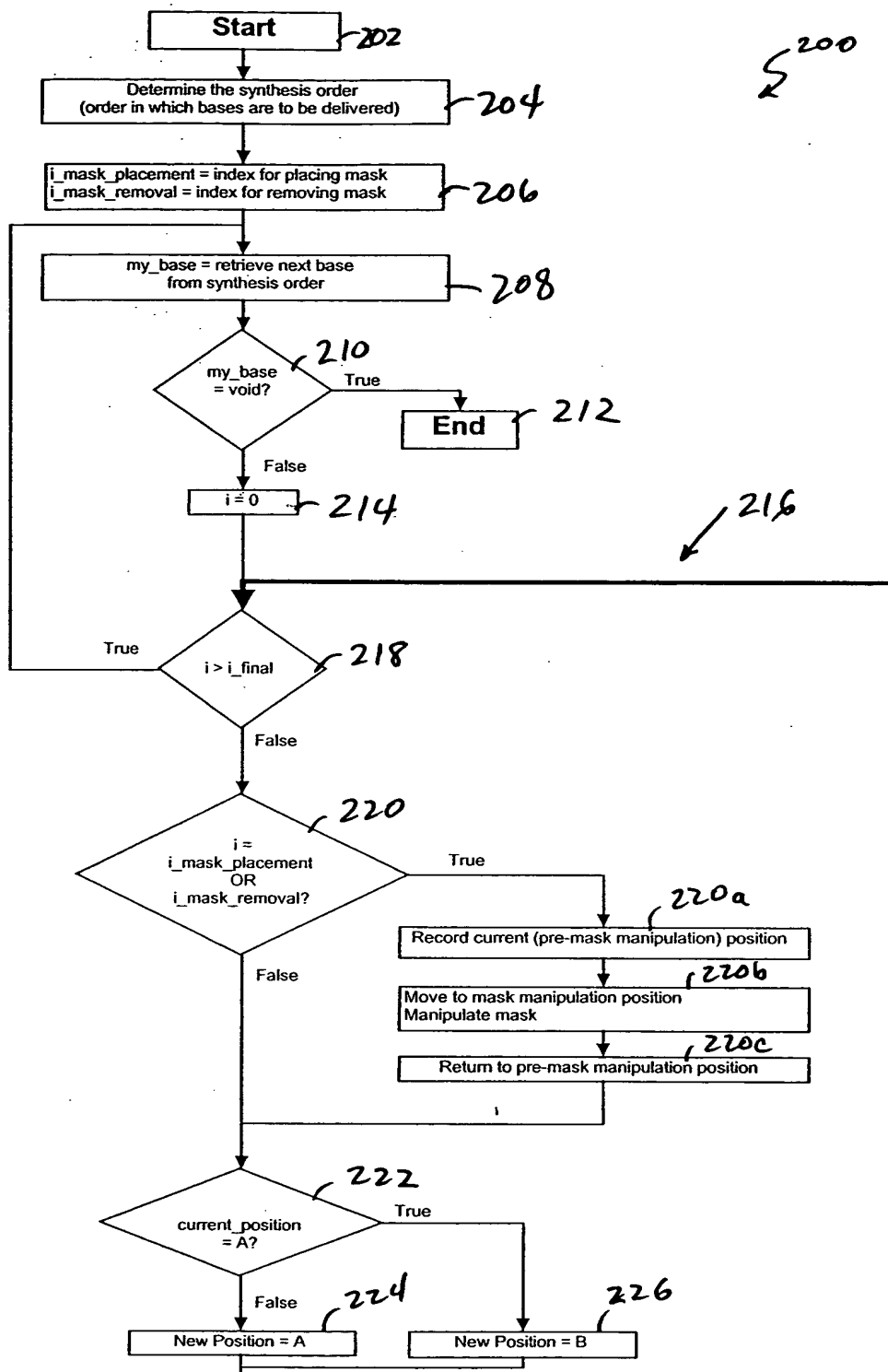


Figure 34

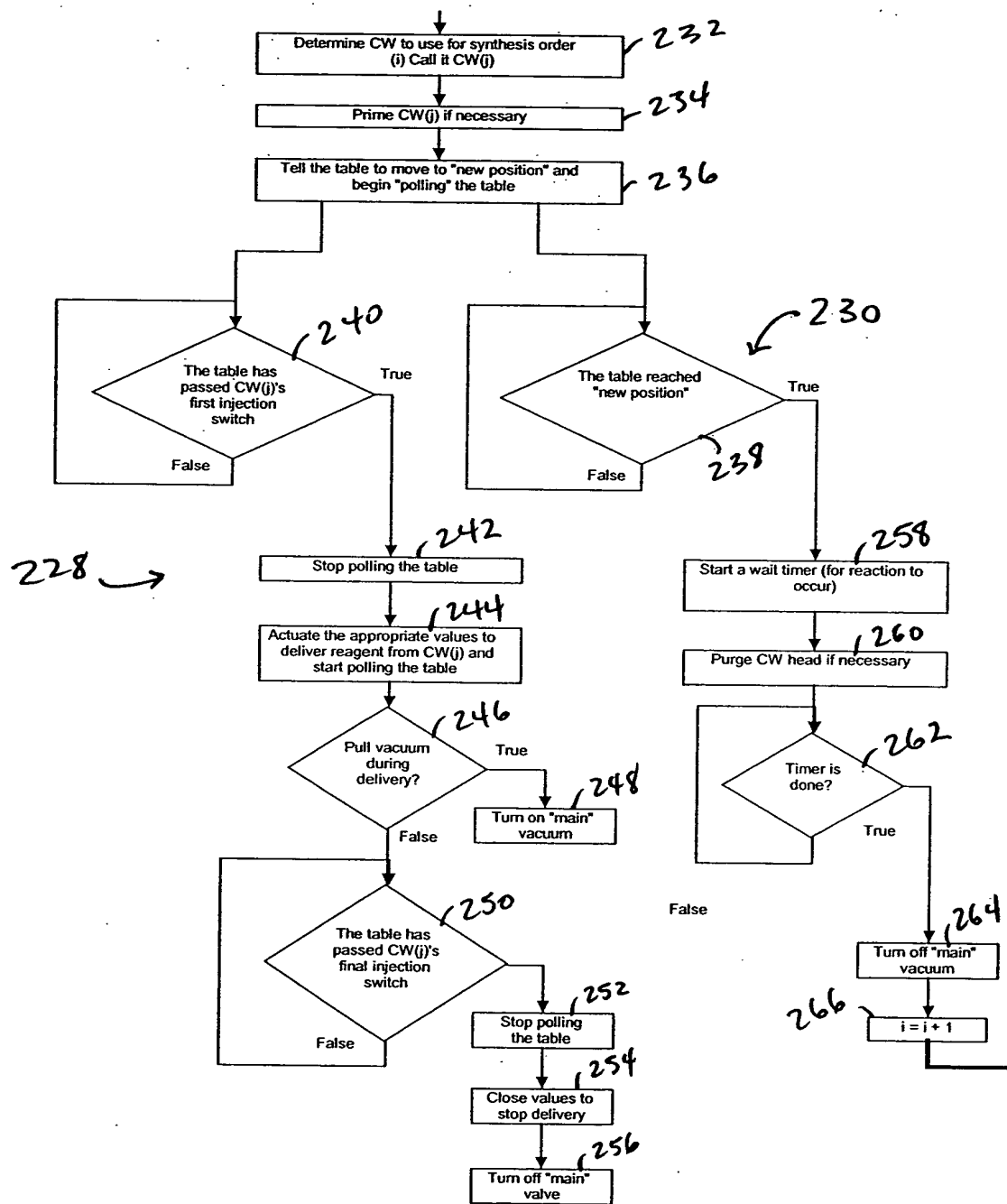


Figure 35

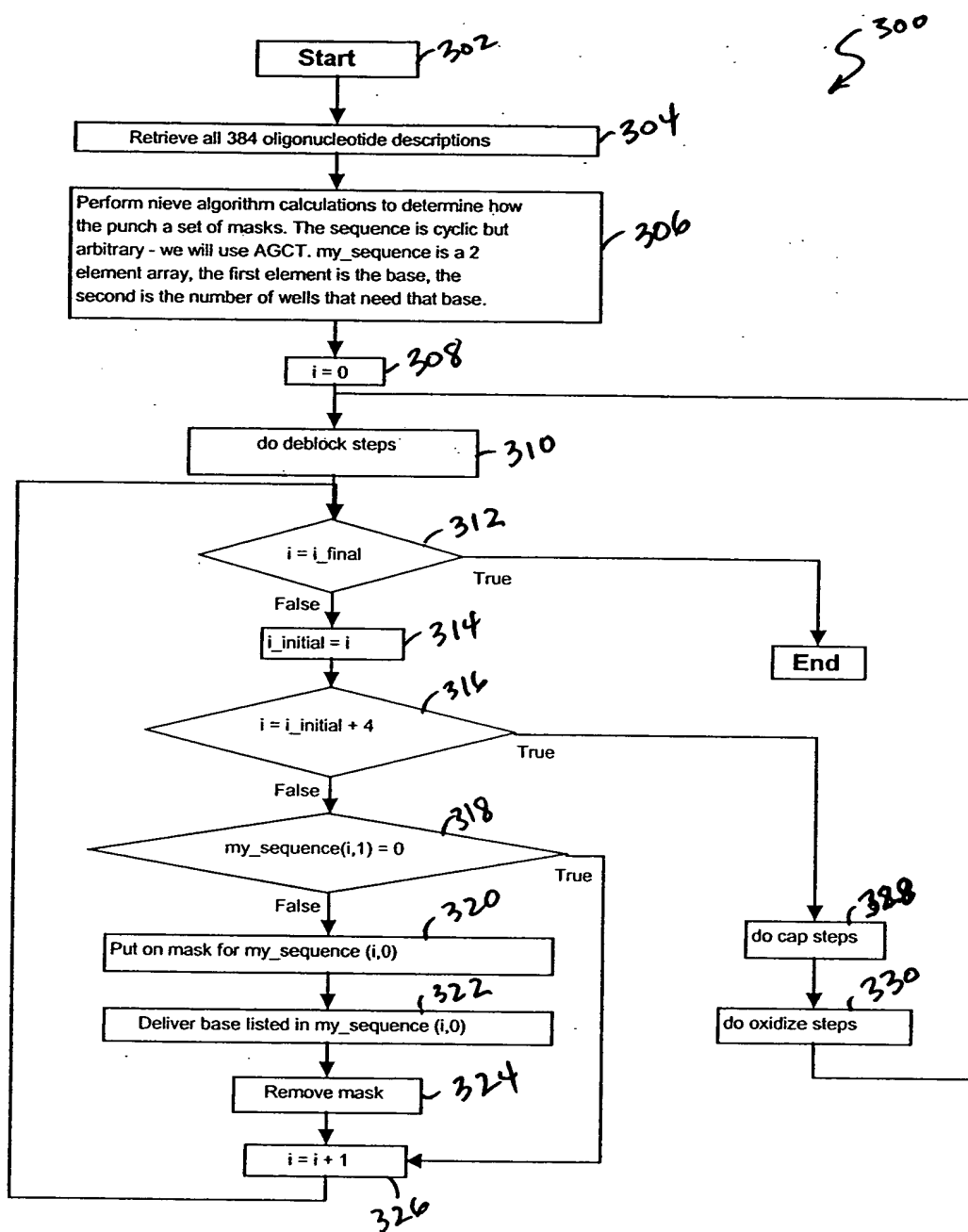


Figure 36

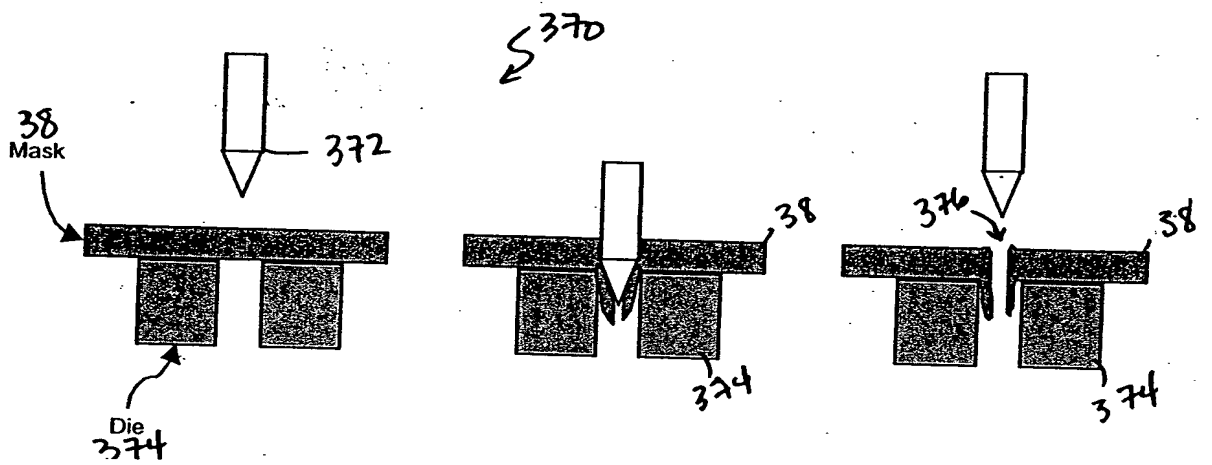


Figure 37

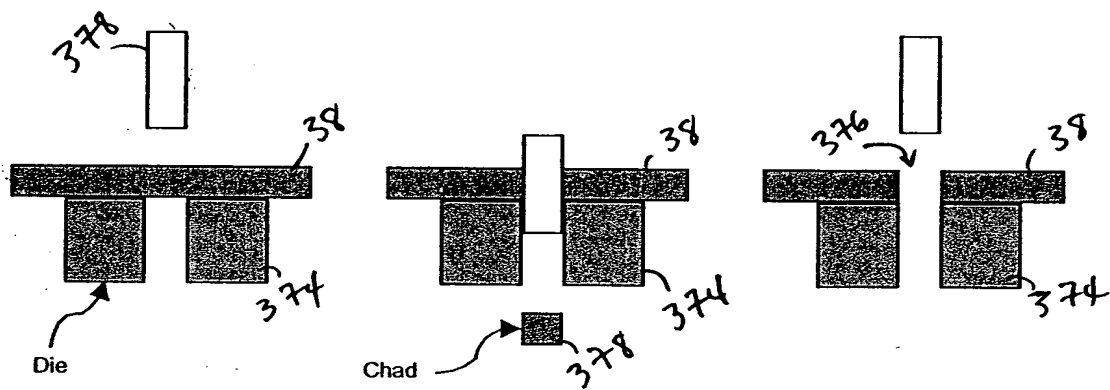
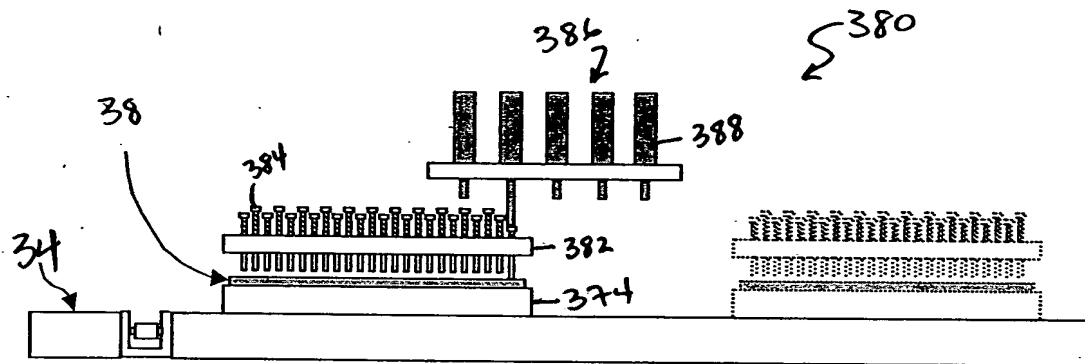
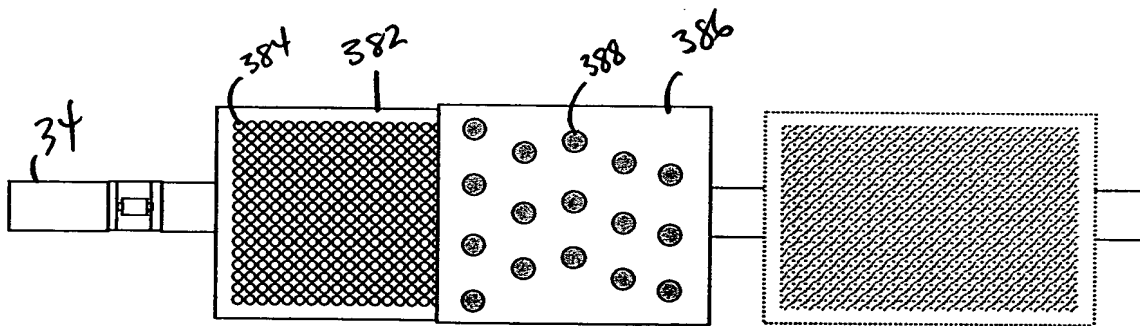


Figure 38



(a)



(b)

Figure 39

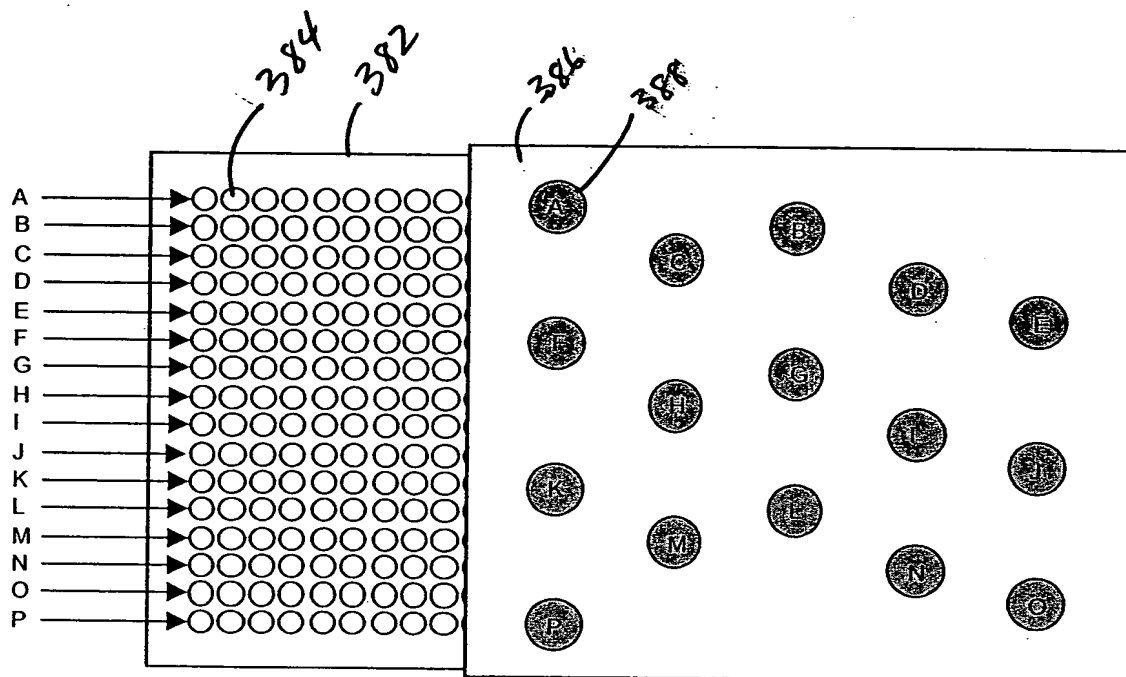


Figure 40

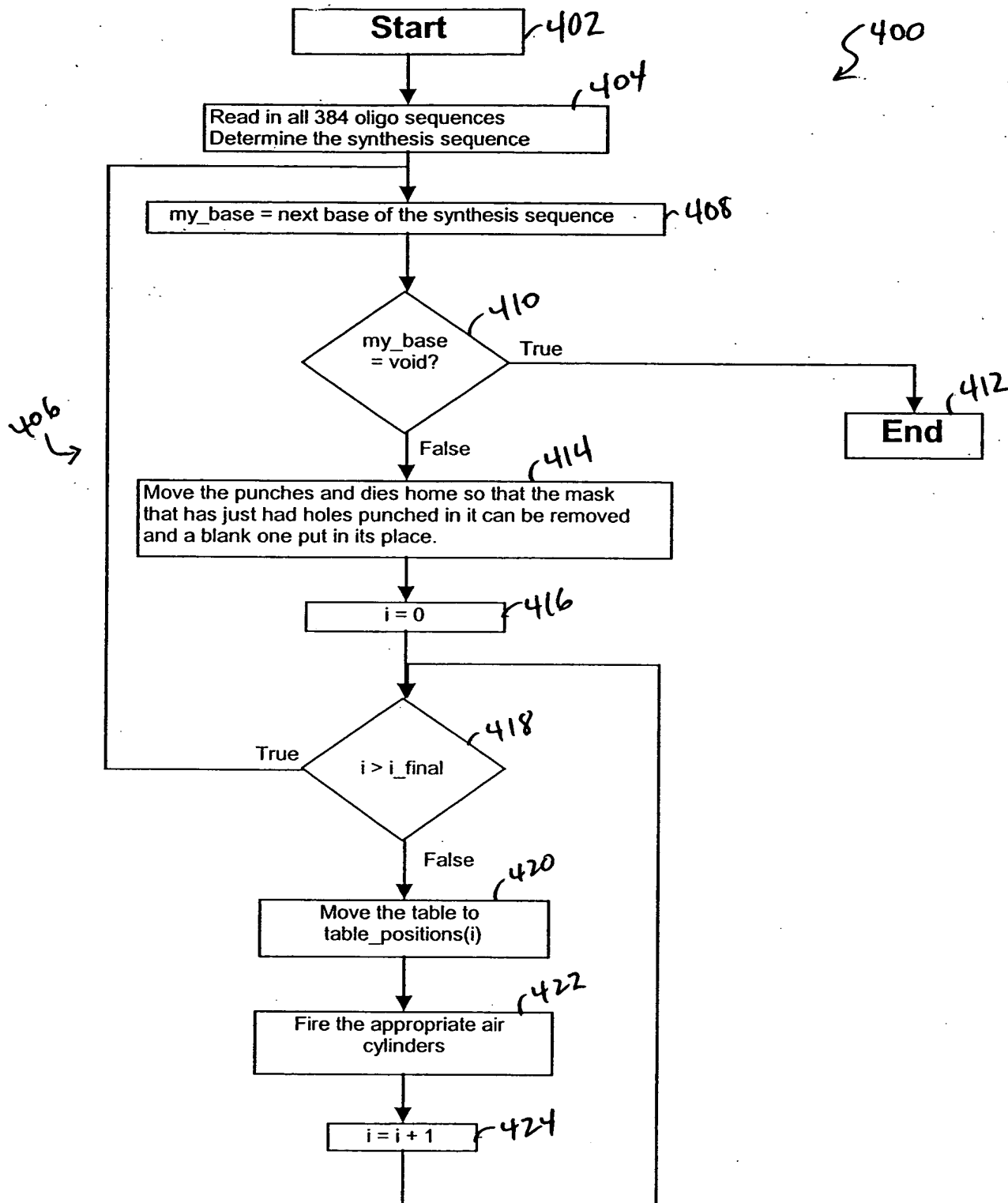


Figure 41

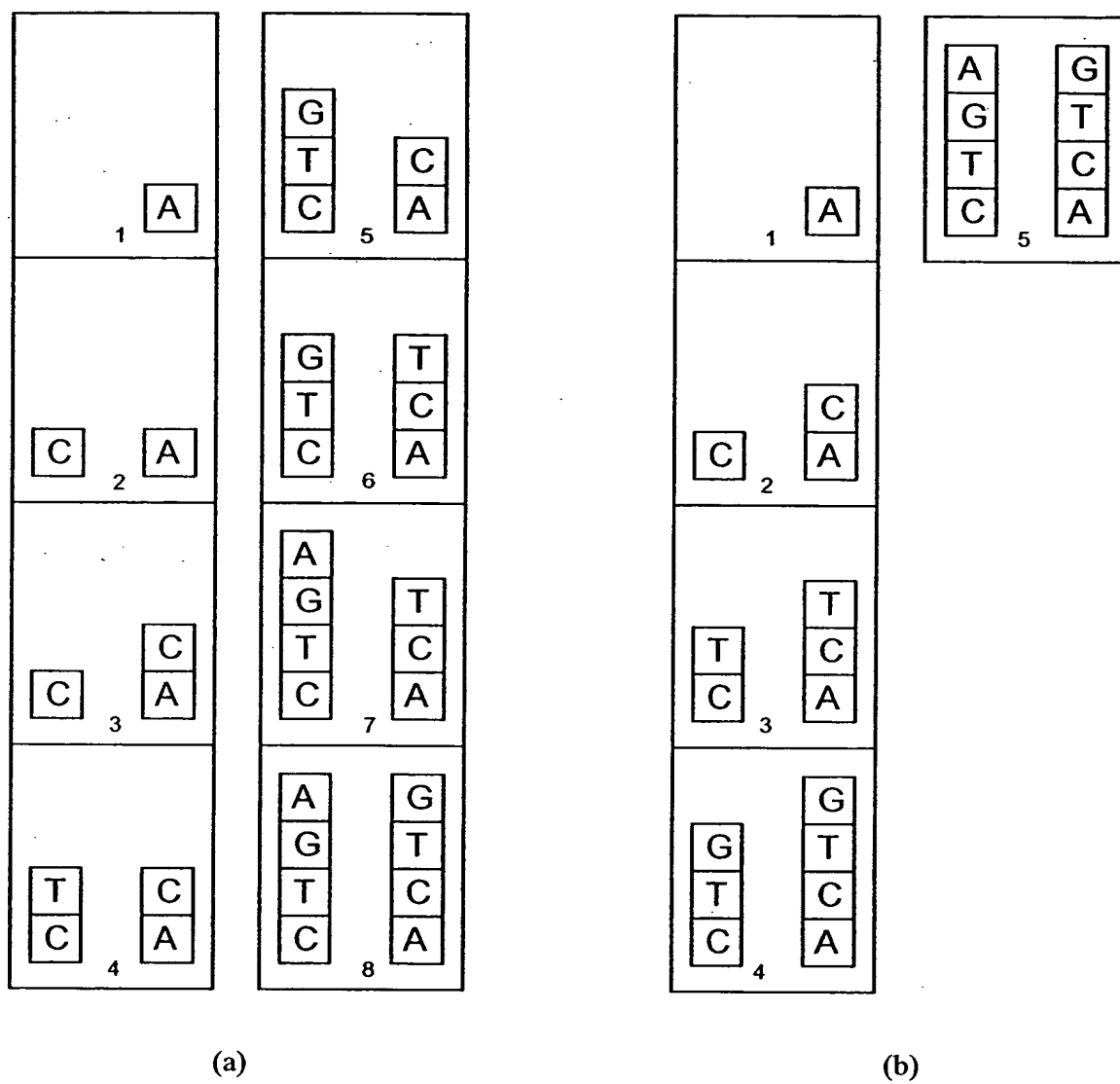


Figure 42

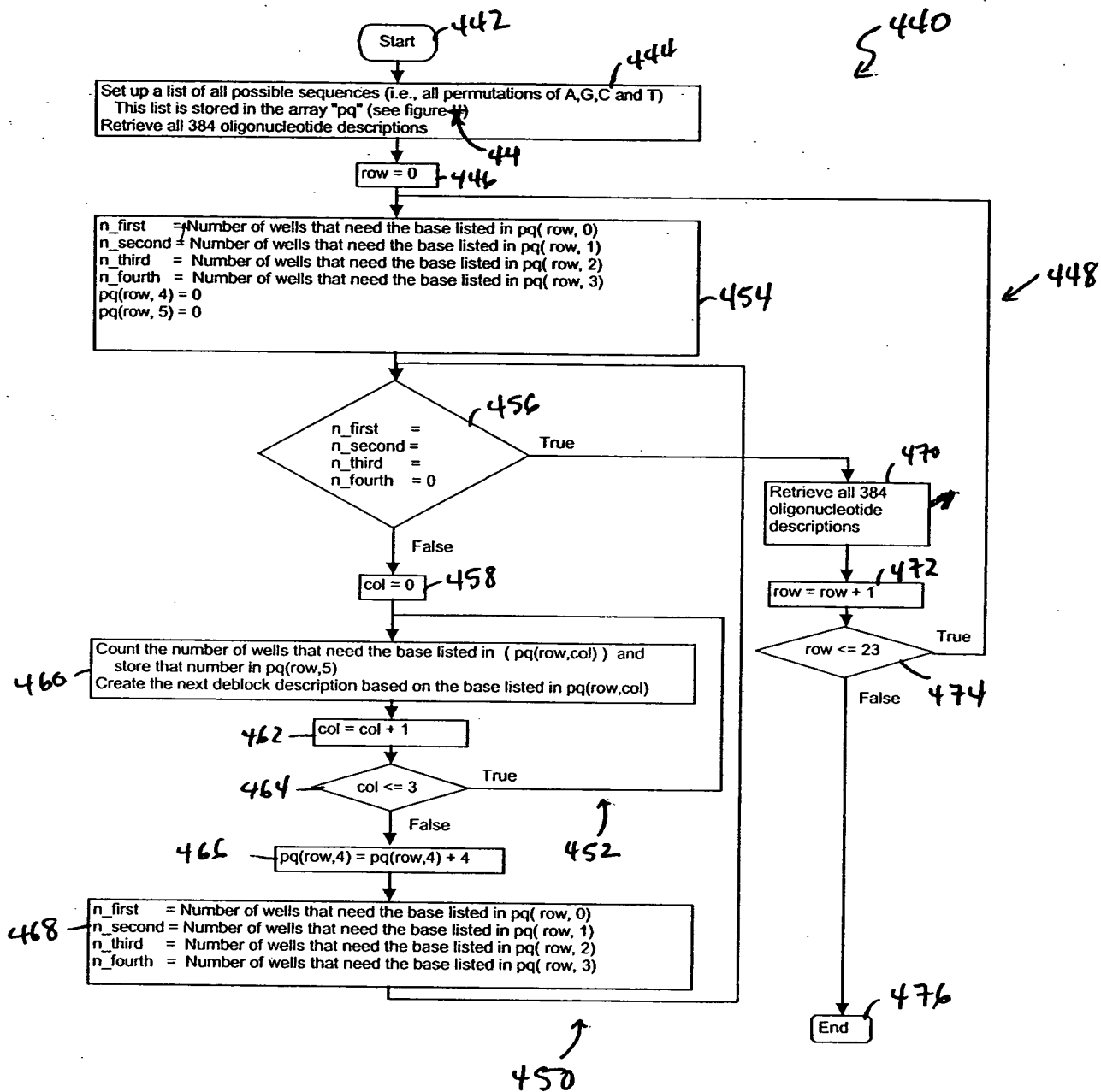


Figure 43

	col ↓					
	0	1	2	3	4	5
0	A	G	C	T	60	7680
1	A	G	T	C	72	7680
2	A	C	G	T	64	7680
3	A	C	T	G	64	7680
4	A	T	G	C	68	7680
5	A	T	C	G	60	7680
6	G	A	C	T	56	7680
7	G	A	T	C	60	7680
8	G	C	A	T	0	0
9	G	C	T	A	0	0
10	G	T	A	C	0	0
11	G	T	C	A	0	0
12	C	A	G	T	0	0
13	C	A	T	G	0	0
14	C	G	A	T	0	0
15	C	G	T	A	0	0
16	C	T	A	G	0	0
17	C	T	G	A	0	0
18	T	A	G	C	0	0
19	T	A	C	G	0	0
20	T	G	A	C	0	0
21	T	G	C	A	0	0
22	T	C	A	G	0	0
23	T	C	G	A	0	0

All 24 permutations of the bases A, G, C and T

Number of cycles (evenly divisible by 4) through a given permutation required to synthesize all the oligonucleotides.

Total number of bases deprotected using a given permutation. This number must be the same for all permutations as they are all intended to be used to synthesize the same set of oligonucleotides. (It is only here for testing).

Figure 44

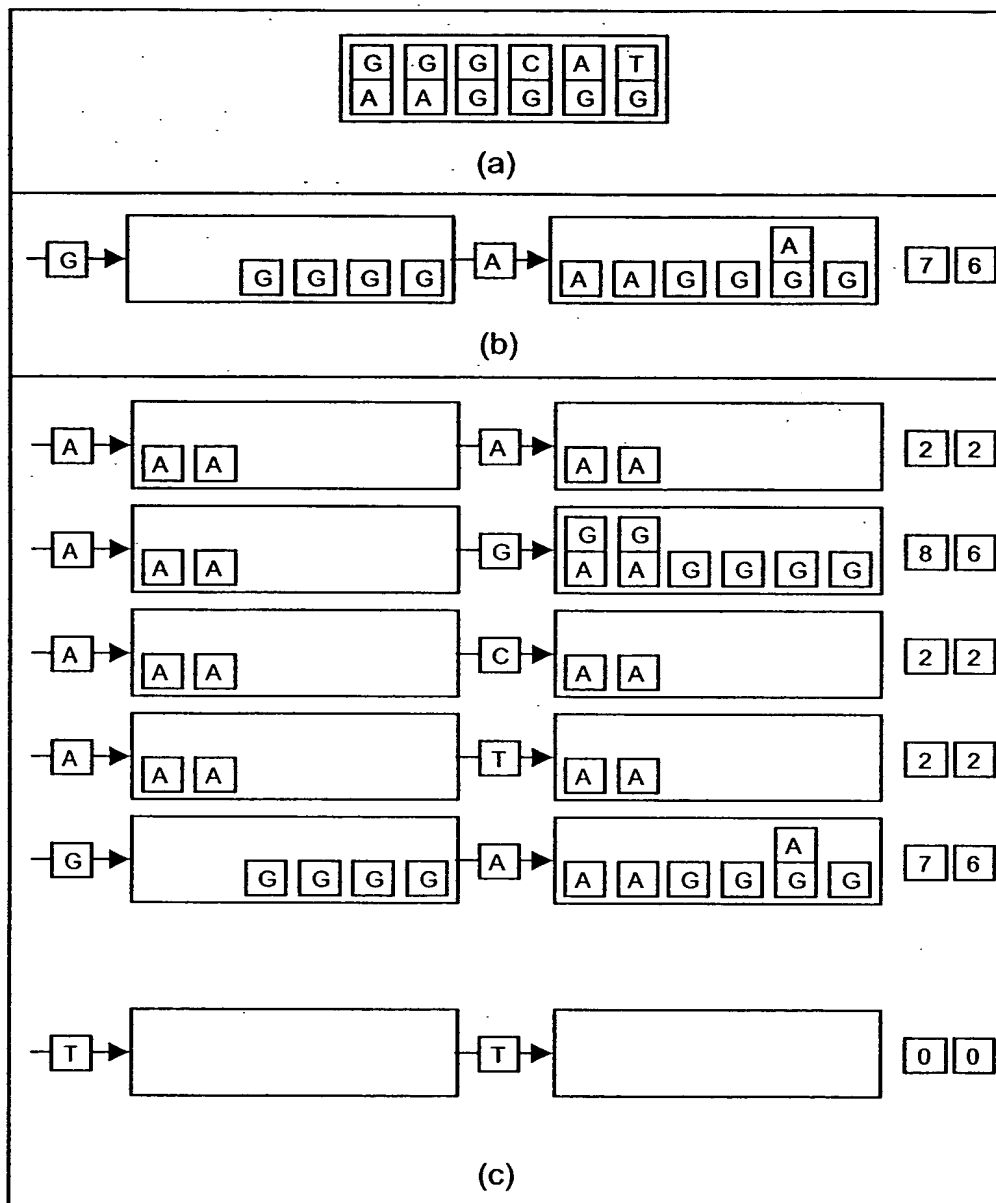


Figure 45

<u>Sequence</u>		<u># of coupling reactions</u>			<u># of oligos coupled</u>		
First Base	Second Base	First Base	Second Base	Total	First pass	Unique on second pass	Total
G	A	4	3	7	4	2	6

(a)

<u>Permutations</u>		<u># of coupling reactions</u>			<u># of oligos coupled</u>		
First Base	Second Base	First Base	Second Base	Total	First pass	Unique on second pass	Total
A	A	2	0	2	2	0	2
A	G	2	6	8	2	4	6
A	C	2	0	2	2	0	2
A	T	2	0	2	2	0	2
G	A	4	3	7	4	2	6
G	G	4	1	5	4	0	4
G	C	4	1	5	4	0	4
G	T	4	1	5	4	0	4
C	A	0	2	2	0	2	2
C	G	0	4	4	0	4	4
C	C	0	0	0	0	0	0
C	T	0	0	0	0	0	0
T	A	0	2	2	0	2	2
T	G	0	4	4	0	4	4
T	C	0	0	0	0	0	0
T	T	0	0	0	0	0	0

(b)

Figure 46

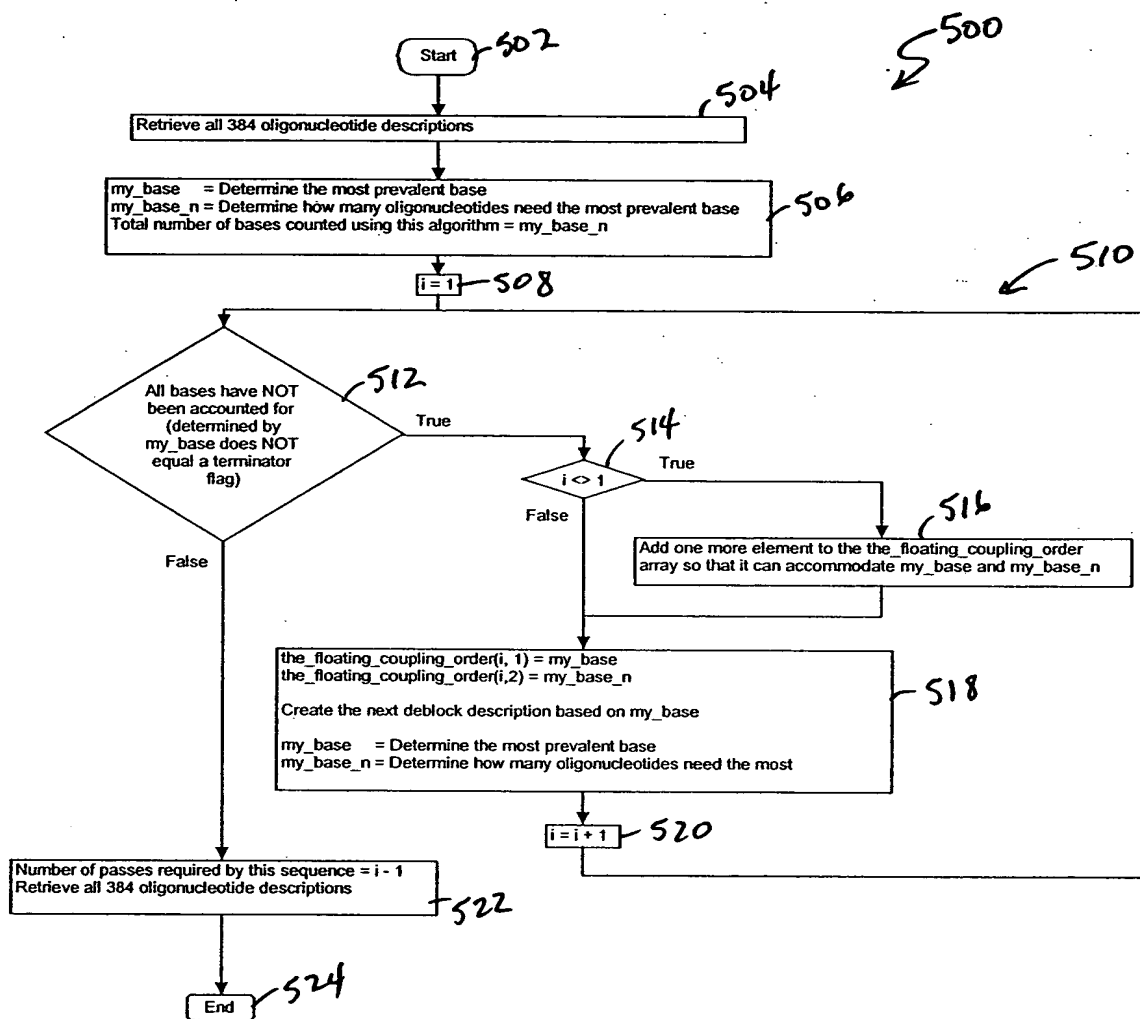


Figure 47

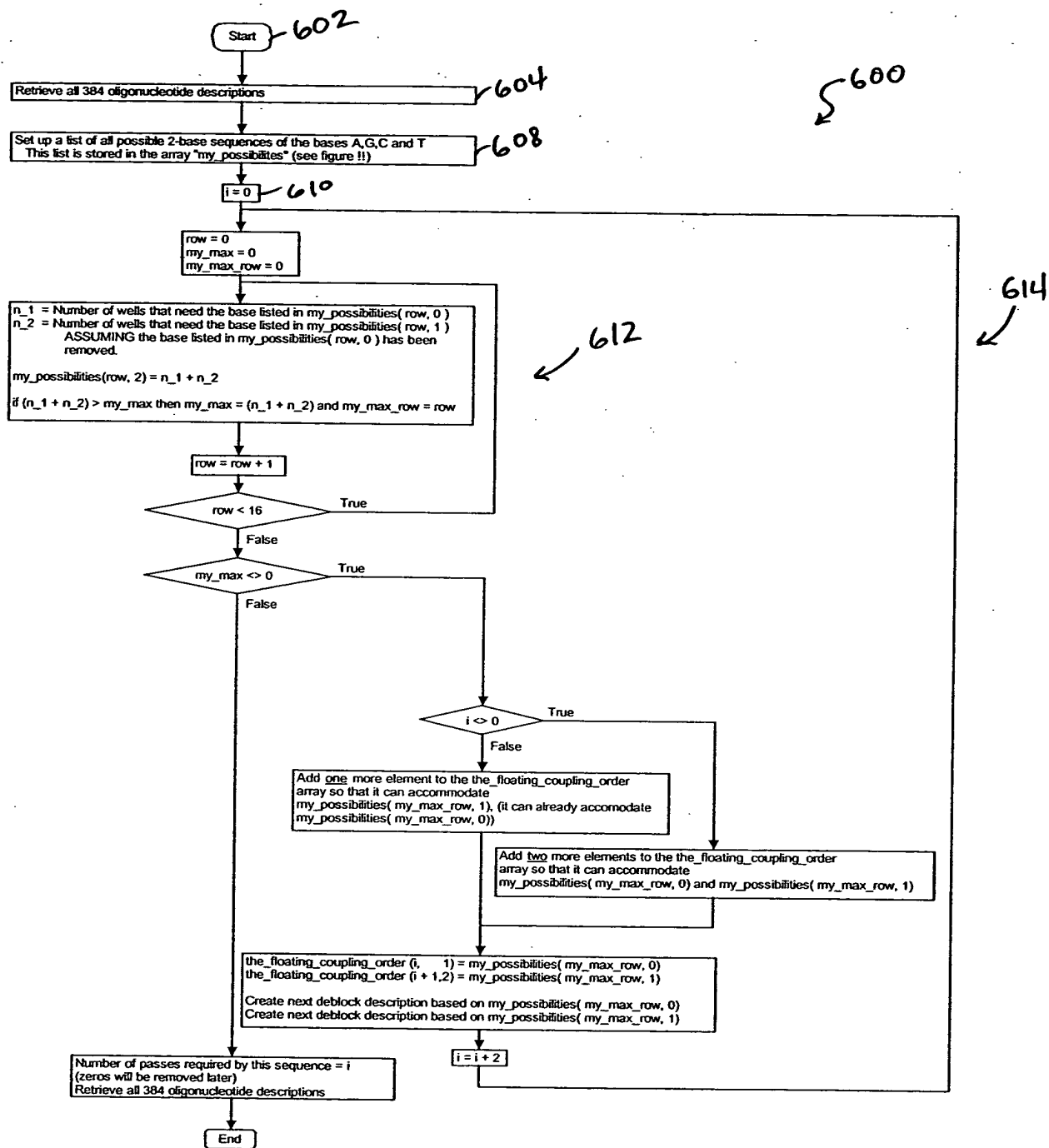


Figure 48

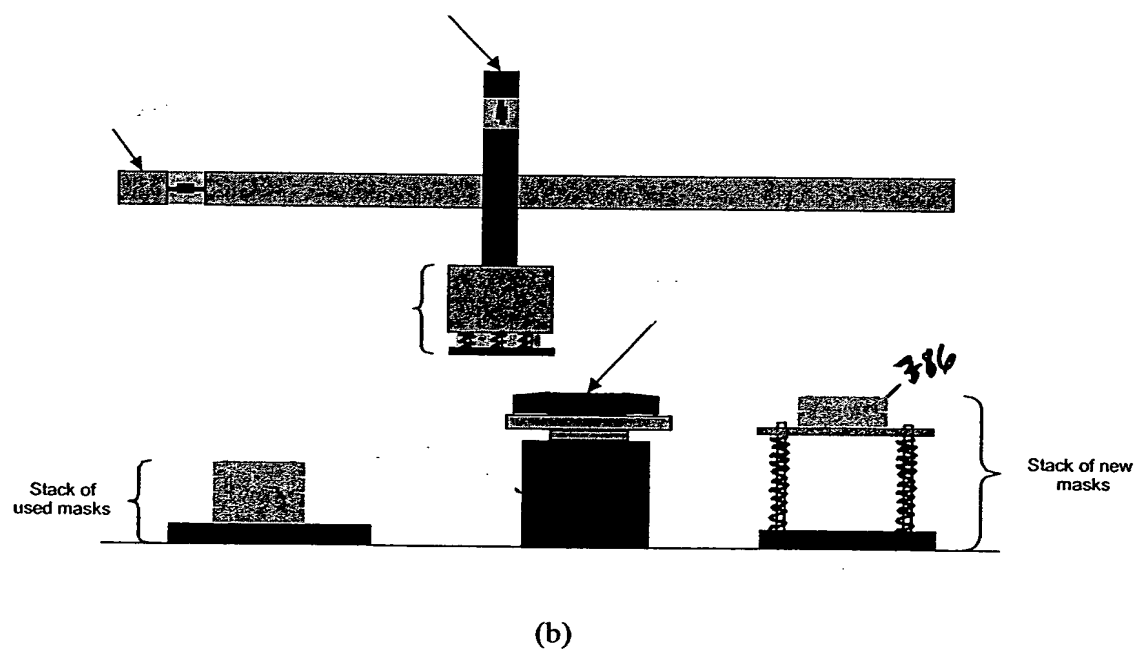
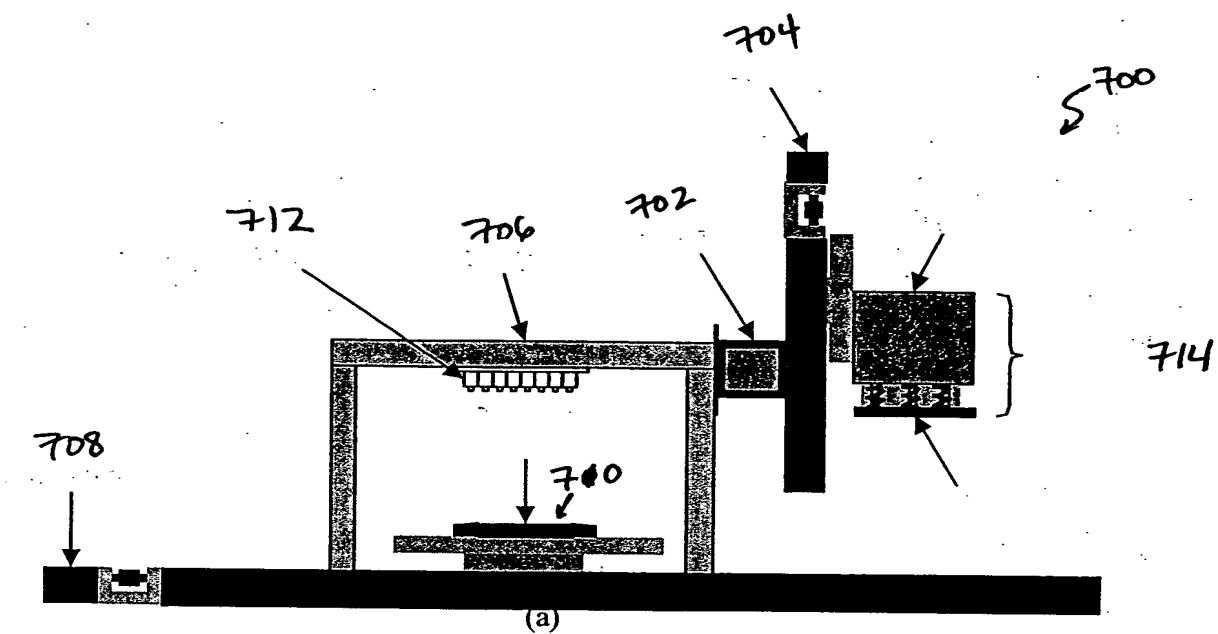


Figure 49

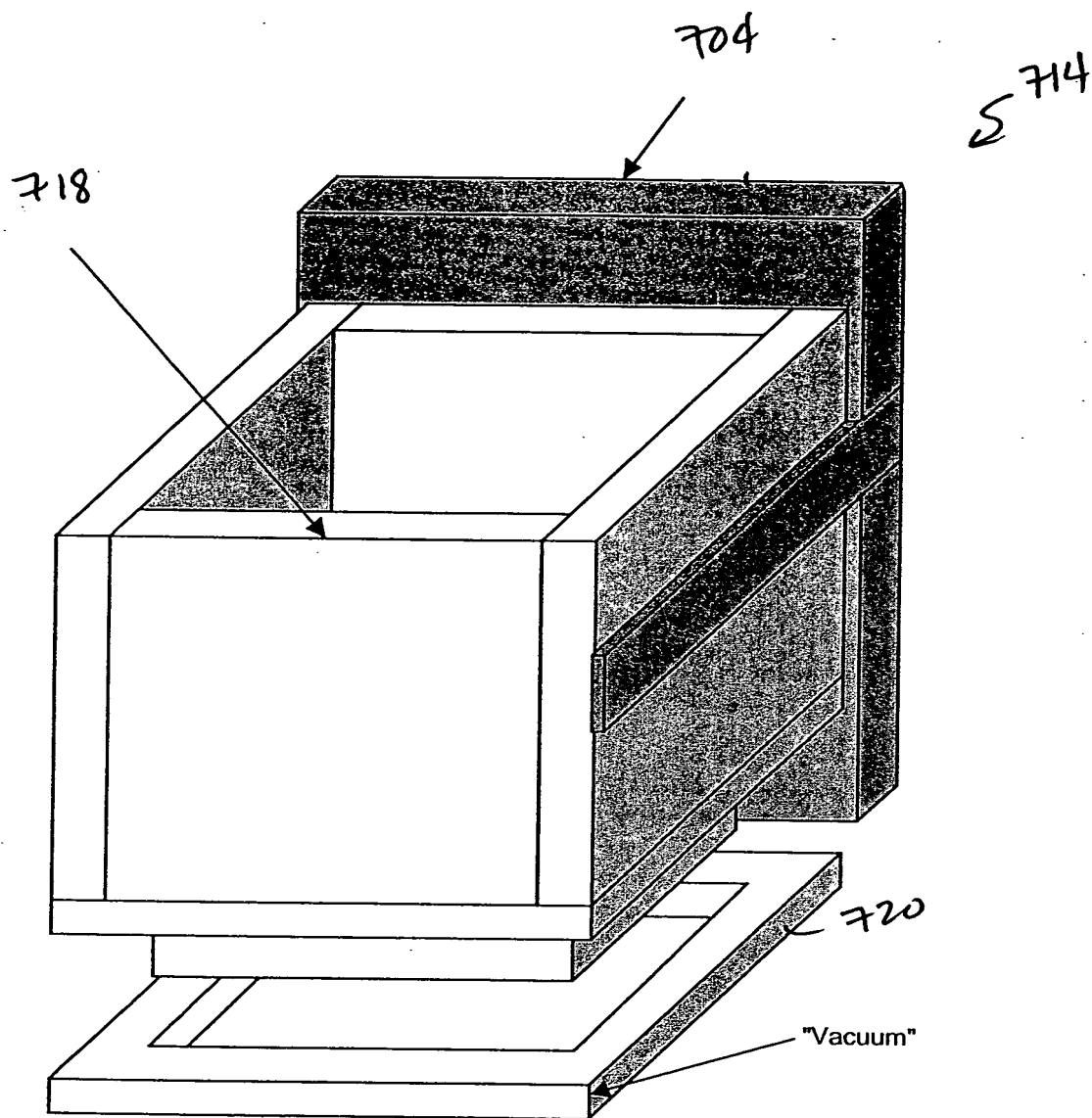


Figure 50

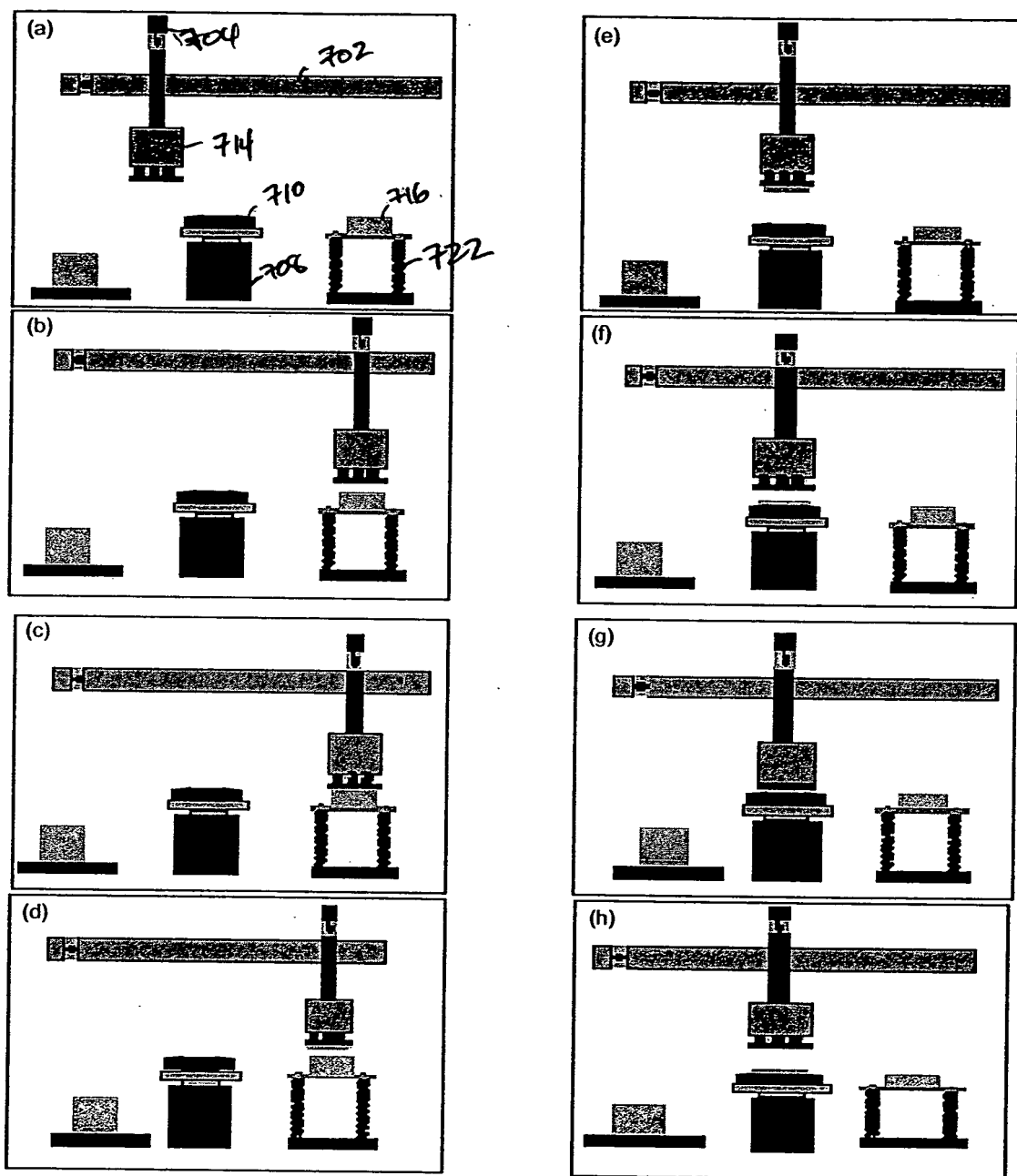


Figure 51

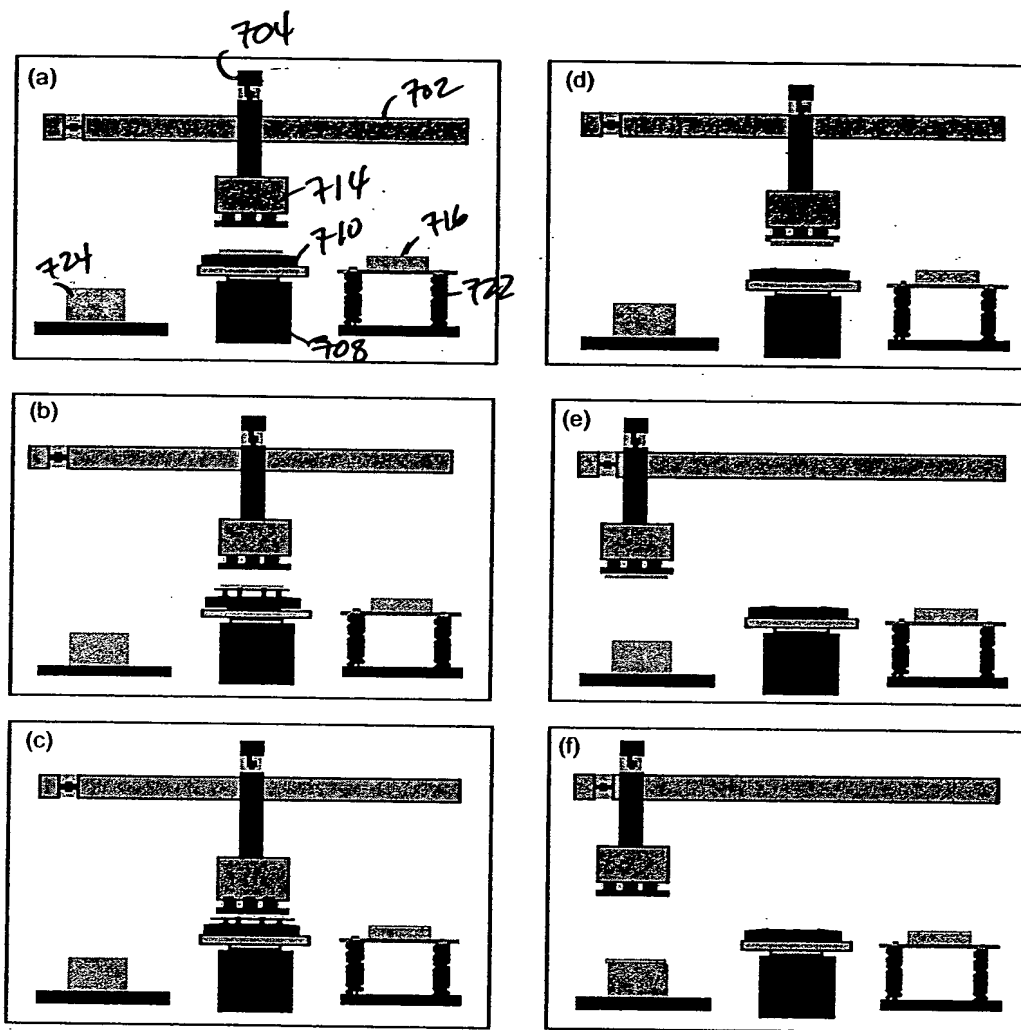


Figure 52